Lane County Local Food Market Analysis

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About the UO EDC

The University of Oregon Economic Development Center is a partnership between the Community Service Center, the Center for Sustainable Business Practices, the Sustainable Cities Initiative, and UO faculty. The UO Center provides technical assistance to organizations throughout Oregon, with a focus on rural economic development. The UO Center seeks to align local strategies to community needs, specifically with regards to building understanding of the benefits of sustainable practices and providing technical training to capitalize on economic opportunities related to those practices. The EDC is partially funded through a grant from the U.S. Department of Commerce, Economic Development Administration.

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CHAPTER 1. BACKGROUND

This report presents a market analysis of the local food system in Lane County. The core objective of this project is to characterize the demand and supply elements of the local food market and identify current and future opportunities to increase local production and consumption for the purpose of economic development. The market analysis uses six food crops—those that have the market potential to attract interest from public or private investors in the near term (1-5 years)—as case studies. The study identifies a set of implementation strategies that local governments, nonprofits, and other organizations should consider to achieve the goal of increasing local production and consumption of food products.

Introduction

In the United States, food travels an average of 1,500 miles from farm to consumer.[2] Localization of the food system not only reduces the distance that food travels, but may also have a positive impact on the quality, freshness and nutrition of the food. Additionally, promoting the localization of the entire system supports job growth and helps to maintain traditional agricultural economies.[3] A community with a localized food system is more resilient to disasters, since it has the capacity to grow, process, store and distribute a sufficient quantity of nutritious food for its residents.

This project was sponsored by the U.S. Economic Development Administration (EDA) (as part of the EDA's University Center program), the City of Eugene, Lane County, and the Eugene Water and Electric Board. It aims to promote economic development by analyzing the market for local food and identifying barriers and opportunities for growth. While the expansion of local food markets has many potential benefits, this analysis focuses on market potential and economic development opportunities.

The expansion of the local food market will contribute to economic development by capturing more of the dollars spent on food back into the local economy. For example, a study on farmers markets in 2005 concluded that each dollar spent at farmers markets in Iowa generated 58 cents in indirect and induced sales, and that each dollar of personal income earned at farmers markets generated an additional 47 cents in the local economy. The jobs multiplier was calculated to be 1.45 (meaning that for every one job supported by the farmers market, nearly

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[2] Wendy Gordon. "Food Essentials: Shop Wisely, Cook Simply, Eat Well." 16 Sept 2009: Web. 7 Jul 2010. <http://www.simplesteps.org/food/eating-well/food-essentials-shop-wisely-cook-simply-eat-well>.

[3] "Leopold Center Study: Local Foods Could Bring Jobs to Southeast Iowa." *Leopold Center for Sustainable Agriculture*. Iowa State University, 29 09 2009. Web. 7 Jul 2010. <http://www.leopold.iastate.edu/news/newsreleases/2009/092909_seiowa.html>.

another half time job in another local industry was created.[4] Local food produced and consumed locally means more money spent and more jobs retained locally.

This project focuses on the local food economy as an economic development opportunity. The emphasis is on identifying business opportunities that will create and sustain local employment. In particular, this project investigates the potential for expanding the local food economy in the short-term: the next one to five years.

Purpose and Methods

The purpose of this project is to determine whether it is economically feasible to increase local food production and consumption in Lane County. It aims to identify gaps in the food production and supply chain, as well as to propose economically feasible implementation strategies and business models that address these gaps. In addition, the project uses six focus crops as case studies – tomatoes, apples, wheat, beans, salad greens, and winter squash- to examine the Lane County food supply chain in detail. This project includes the following elements:

- **Local agricultural production research** - Using data collected by the Oregon Agricultural Information Network (OAIN), the United States Department of Agriculture (USDA) Agricultural Census and the National Agricultural Statistics Service (NASS), CPW analyzed historic and current crop yields and price trends to identify crops with potential for expanded production in the region. These crops were further analyzed to determine the degree of local consumer demand.

- **Local food demand research** - Through interviews and data collected from institutional buyers (such as supermarkets, schools, colleges and universities, correctional facilities, and nursing homes), this report identifies sustained demand for specific crops and the price elasticity of that demand.

- **Supply chain analysis** - Based on interviews with local agricultural experts, local food advocates and businesses, the supply chain analysis looks at how food moves from farm to table. Moreover, the analysis examines the benefits and barriers to specific crops in production, processing, storage, and sales.

- **Implementation strategies** - Using case study research of other communities involved in food re-localization efforts and analysis of the supply chain, this project identifies implementation strategies to foster local economic development through the local food economy.

[4] "Local Food Systems: Concepts, Impacts and Issues." Economic Research Service, USDA. May 2010. Web.

Organization of this Report

This report includes six chapters and eleven appendices. It is organized as follows:

Chapter 2: Framework for this Study explains the context and methodological framework for the project. It defines key terms and identifies recent trends in agriculture. It also provides an overview of agricultural economics. It includes a description of other projects and organizations in Eugene working on local foods issues.

Chapter 3: Agriculture in Lane County describes the current status of the agricultural economy in Lane County. It details various aspects of the local food system, including crops, farms, processors, storage facilities, and distributors.

Chapter 4: Local Demand for Food summarizes the local household and institutional demand trends for food. It investigates current price elasticity for local crops, as well as projections for future demand.

Chapter 5: Supply Chain Analysis further details the supply chain for local food in the region, focusing on six crops identified as the most promising for short-term economic development. It illustrates the current agricultural context for these crops, following them through the supply chain to identify barriers, opportunities, and gaps in the local food system.

Chapter 6: Implementation Strategies provides a summary of the implementation strategies for growing the local food system based on identified gaps in the system. The recommendations are organized by gap and time frame (short-term, medium-term, long-term or ongoing).

This report also includes 11 appendices:

Appendix A: Agricultural Data details various aspects of the current status of the agricultural economy of Lane County.

Appendix B: Case Studies provides an array of best practices and success stories localizing the food economy.

Appendix C: Interview Synthesis details information that CPW gathered during interviews with agricultural and marketing experts and local processors, distributors and institutions.

Appendix D: Food Expenditure Data details demand data and calculations on food spending in Lane County

Appendix E: Description of Focus Crop Supply Chains provides detailed qualitative information about the production, processing, and distribution supply chains of the six focus crops analyzed in Chapter 4.

Appendix F: Supply Chain Analysis Data explains the supply chain analysis data and calculations related to the crop-specific breakdowns.

Appendix G: Sample Distributor Supported Agriculture Contract provides a sample agreement between a food distributor and a farmer.

Appendix H: Description of Relevant USDA Grants provides a detailed list of available grants to help implement the recommended strategies.

Appendix I: Sample School Contract provides a sample request for proposals from the City of Springfield school district that includes language that requires the distributor to provide local food.

Appendix J: Implementation Strategies provides detailed information for each implementation strategy outlined in Chapter 6, including an overview, business case, case studies, time frame and next steps.

Appendix K: Maps Describing Land Suitability For Focus Crop Expansion shows land within Lane County that is suitable for growing the focus crops and shows irrigation capability.

CHAPTER 2. FRAMEWORK FOR THIS STUDY

This chapter provides a detailed context within which to view the methods, scope, and purpose of this study. It explains the facts, theories, and assumptions that create the conceptual framework of the study. Developing an explicit framework is particularly important for a study of local food systems because the field of local food planning is new, complex, constantly changing, and very diverse. There are countless local food projects around the country, all with different goals, strategies, and definitions for local food.

This chapter starts with a brief discussion of how local food is defined and why people are interested in it. Next there is an overview of the agricultural economy, exploring the various parts of the economy from farm to consumer. Finally, these two pieces are brought together for a discussion of what role local food does or could play in the economy, and what factors affect its economic viability.

Scope of this Study

This study is limited in scope to food produced and consumed in Lane County. This focus was chosen for several reasons:

- The project partners are all located in Lane County;
- The study is focused on local economic development through strengthening the local food system; and
- Other projects are examining food localization opportunities in other counties.

Given this focus on Lane County, the study defines local food as food produced and consumed within Lane County. CPW recognizes this geographic focus is somewhat inconsistent with the definitions of local food presented below. We also recognize that markets in the Willamette Valley are functionally integrated. This study takes a narrower scope for pragmatic reasons: conducting the supply and demand analysis within the seven-county Willamette Valley region is impractical given the objectives of this study. While the scope of this study is limited, the implementation steps can clearly cross-jurisdictional boundaries.

Many of the lessons learned, however, are applicable to geographically and economically similar counties such as Linn and Benton Counties. In addition, the restriction of scope to Lane County is not a strict one. For example, nearby processing or storage facilities that do not fall within the County are still taken into account if deemed economically important (currently or potentially) to Lane County farmers and the local food system.

The Importance of Local Food

Defining Local Food

Any in-depth discussion of local food must begin by answering the foundational question: "What is local food?" There are many different definitions of local food. Local food is often associated with ideas like "organic," "sustainable," or "from a small farm." For the purposes of this study, however, we will consider these to be distinct concepts.[5] Some common definitions of "local food" include:

- Food produced within a certain distance (e.g. 100 miles);
- Food produced within a day's drive (about 400 miles);[6]
- Food produced within a given political boundary (e.g. the state, or the county);
- Food produced within a "bioregion" (e.g. a watershed or some other ecologically defined region); or
- Food produced by someone you or your community has a personal connection with.

Despite their diversity, the above definitions are variations on a common theme: local food is produced near to where it is grown, processed and consumed. In this study we apply an alternative version of the definition of local food—food grown and consumed in Lane County. Moreover, none of the above definitions are inconsistent with the geographic scope of this study.

Food Miles

Connected to the concept of local food is the concept of "food miles." Coined in 1994 by researcher Andrea Paxton, it is a term that captures the amount of distance traveled by food from where it is grown to where it is consumed. A study done by Carnegie Mellon University in 2008 shows that food travels on average 1,017 miles for direct delivery and 4,191 miles when the total transportation of all its production requirements are counted.[7] Transporting food such long distances uses large amounts of fuel and has corresponding environmental impacts. Food re-localization efforts often try and reduce the number of miles that food travels. Use of food miles as a measure of environmental impact has been criticized,

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[5] Hand, Michael, and Stephen Martinez. "Just What Does Local Mean?." *Choices* 2010: n. pg. Web. Jan 2010.

[6] Note: In the 2008 Food, Conservation and Energy Act, the U.S. Congress defined local as food being locally produced within 400 miles from where it was consumed, or within the State within which it was produced. The USDA also uses this definition.

[7] Christopher L Weber and Scott H Matthews, "Food Miles and the Relative Climate Impacts of Food Choices in the United States," Environmental Science and Technology (2008): 3508-3515.

however, since transportation only accounts for 11 percent of the carbon emissions from food production.[8]

Price Implications of Food Localization

Despite the fact that transportation accounts for a minor part of the carbon emissions of food production, it is not an insignificant factor in the cost of production. Recent history provides an indication of how energy costs can affect food prices at the retail level. As an example, CPW gathered data on local prices of selected food products in the summer of 2007 and 2008. In 2007, the average price of gasoline was $2.80/gallon. In 2008, it spiked to $3.27/gallon, a 17 percent increase.[9]

This price spike resulted in direct and immediate impacts of the price of produce items. See Table 2-1 below for details.

Table 2-1 Price of Food, 2007 and 2008

U.S. Food Product	Price 2007	Price 2008	Percent Change in Price	Unit
Tomatoes	$1.65	$1.74	5%	Pound
Salad Greens	$1.25	$1.31	5%	Pound
Apples	$1.12	$1.32	18%	Pound
Dried Beans	$0.94	$1.21	29%	Pound
Corn	$3.27	$4.36	33%	Bushel at harvest
Wheat	$5.25	$7.86	50%	Bushel at harvest
Rice	$10.26	$17.88	74%	Planted acre

Potential Benefits of Local Food

Proponents of local food argue that a local food system produces many benefits including **environmental sustainability, food security,** and **economic development**. In this study CPW focused on economic development, but the importance of the other factors should still be acknowledged.

Consuming food from local farms is often more **environmentally friendly** than importing it, primarily because locally grown and distributed food requires less fuel for transportation. As mentioned above, however, only 11 percent of emissions from food production are due to transportation—most of the emissions come from use of fertilizers, farm machinery, packaging, and other factors. Another potential environmental benefit of local foods might come from increased accountability of producers to consumers. In this context consumers may demand that farmers use environmentally friendly agricultural techniques, and are more likely to know when farmers do not comply with these standards.

[8] Ibid.

[9] U.S. Bureau of Labor and Statistics. Average Price Data. 2010 16 June 2010. <http://data.bls.gov:8080/PDQ/outside.jsp?survey=ap>

Agricultural practices have direct effects on water quality. The Eugene Water and Electric Board (EWEB) is involved with local agriculture issues as a way of protecting water quality. Most of Eugene's drinking water comes from the McKenzie River; many of the area's farms lie in close proximity to the river (or one of its tributaries), and agricultural runoff is a major source of water pollution. EWEB's strategy is to work with local farmers to develop plans to reduce chemical use, implement conservation practices, and/or transition to organic production.[10]

Another potential benefit of a more localized food system is improved **community food security**. In this context we use food security to mean consistent supply of food at the community level.[11] First, the more food a community produces and processes locally, the less vulnerable it is to disruptions in the food supply due to fuel shortages, price fluctuations, or natural disasters. Second, localizing food systems may improve food security by improving access to fresh produce, if farmers' markets are located in communities without adequate access to fresh produce. The Community Food Security Coalition states that community food security is about, among other things, "supporting local, regional, family-scale, and sustainable food production, building and revitalizing local communities and economies."[12]

Localizing a community's food system is **economically beneficial** because it creates jobs and spurs general economic vitality. When money is spent on goods produced elsewhere, much of this money "leaks out" of the local economy. The less money that leaks out, the more there is left circulating within the local economy, benefiting community members – known as the "multiplier effect." For example, suppose someone from Oregon buys a head of lettuce produced in California. Some of that money goes to the owner and employees of the grocery store, likely Oregon residents, but most of it goes to the distributor and producer, both of whom likely live outside of Oregon. They will probably spend this money outside of Oregon as well, benefiting businesses in their home state. On the other hand, if the head of lettuce were grown locally, nearly all of the money spent on it would remain within the local economy. Much of this money would go toward paying local agricultural, distribution, processing, and retail workers, who would in turn spend it on goods and services locally. If enough money circulates this way, it can actually create new jobs in the retail and service sectors or save existing jobs from disappearing.

A 2006 study of the economic impacts of local fruit and vegetable production in Iowa found significant economic benefits to re-localizing production. Specifically, it found that if Iowans were to purchase seven servings of fruits and vegetables locally for just three months of the year, the direct and indirect economic benefits

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[10] Karl Morgenstern, "Nonpoint Sources of Pollution Assessment Project Fact Sheet," 2006, Eugene Water and Electric Board, 20 April 2010 <http://www.eweb.org/public/documents/water/NPSfactsheet.pdf>.

[11] The USDA uses a different definition of food security that is related to hunger.

[12] Jeanette Abi-Nader, et al., Whole Measures for Community Food Systems: Values-Based Planning and Evaluation (Fayston, VT: Center for Whole Communities, 2009).

would amount to the creation of almost 6,000 jobs.[13] This is the equivalent of about one job per 500 residents, the equivalent of almost 700 jobs for Lane County. A 2010 analysis of increasing local fruit and vegetable production in the upper Midwest calculated jobs multipliers of 1.67 to 1.95, meaning that for every on-farm job directly created through increased production of local fruits and vegetables, up to 95 percent of a job is indirectly created elsewhere in the economy. Furthermore, the study found that on an equal area of land local fruit and vegetable production can support as much as five times as many jobs as corn and soybean production.[14]

What Makes This Study Different

With a few exceptions, local food initiatives tend to focus on supporting local farming and fostering direct farm-to-consumer connections such as farmers markets and community supported agriculture (CSA). Part of what makes this project different is its focus on the entire supply chain: distribution, storage, processing, and institutional demand. There is a growing recognition that a healthy local food system must consist of all of these components, in addition to local farms. One of CPW's goals for this project is to improve the quantity and quality of information available about the complete supply chain.

The study assesses the economic feasibility of strengthening local food systems using a number of tools and techniques. The primary tool is an in-depth supply chain analysis of six agricultural products (Chapter 5). The six focus crops were chosen based on a number of factors including:

- Number of acres currently and historically planted in Lane County;
- Current sales value of crops in Lane County;
- Potential for value added products;
- Agricultural expert opinion; and
- Known institutional demand

The supply chain analysis also analyzes costs of production along each piece of the supply chain, and key measures of economic viability such as consumer demand and price elasticity are taken into account. Another key part of the study assesses the adequacy of existing processing and storage facilities. Finally, all of this research informs the development of implementable business strategies aimed at increasing local food production and consumption in Lane County.

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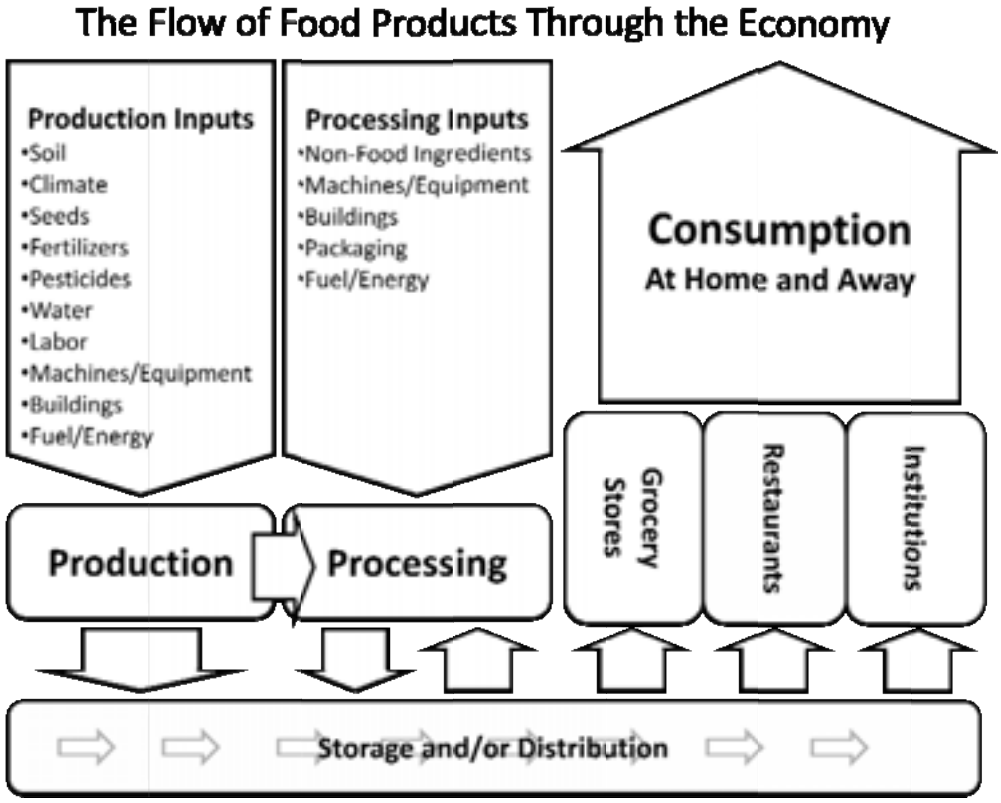
[13] Dave Swenson, The Economic Impacts of Increased Fruit and Vegetable Production and Consumption in Iowa: Phase II (Ames, IA: Leopold Center for Sustainable Agriculture, 2006).

[14] Dave Swenson. Selected Measures of the Economic Values of Increased Fruit and Vegetable Production and Consumption in the Upper Midwest (Ames, IA: Leopold Center for Sustainable Agriculture, 2010).

Understanding the Agricultural Economy

The agricultural economy is a highly complex system. Figure 2-1 conceptualizes this system as a flow of both unprocessed food and food products through the economy, passing from one type of use to another until the item is consumed. The primary components of this system are production, processing, storage, distribution, and sales. Whenever a food product changes hands, time and resources are expended. Each of these transactions has its own supply and demand curves, creating an extremely complex marketplace.

Figure 2-1. The Agricultural Economy



Source: CPW

Production

Production is the first stage in the food system. Producers include farms, orchards, ranches, and home gardeners. The simplified model of production shown in Figure 2-1 illustrates producers taking in a variety of inputs and putting out crops. Important inputs include seeds, fertilizers, labor, machinery, financial capital (which may include government subsidies), fuel, land, and local environmental factors.

Once crops are harvested, the food moves from production to processing, distribution or sales. Many farms do minimal processing on-farm, such as washing, trimming, and sorting vegetables. For farms that sell directly to consumers, the produce may move through all of the sections of the chain without leaving the farmers' possession. In other instances, the farmers may sell their produce to a restaurant or grocery store who will in turn sell it to

consumers. Finally, many farmers sell to a wholesale processor or distributor, who in turn sells the farm products to a restaurant or grocery store, often after packaging or processing to add value.

Processing

Processing refers to any modification of food products to make them safer, more valuable, easier to handle, more edible, or more attractive. It may include something as simple as washing a potato or something as complicated as turning a cabbage into vacuum-packed sauerkraut. Like farmers, processors require inputs. The most important of those inputs is the unprocessed food product itself. Others may include additional ingredients, machinery, labor, packaging, and energy.

Distribution and Storage

The terms distribution and storage refer to everything that happens to food products in between production, processing, and consumption. Distribution may be as involved as shipping bananas halfway around the world, or it may be as simple as carrying a box of freshly picked tomatoes from the garden to a road stand. Likewise, storage may take place on farm, in central warehouses, in restaurants, or in any other facility that is part of the food supply chain.

Different food products have unique requirements in terms of storage and distribution. Temperature, humidity, handling, and time are all factors that must be controlled to prevent food from spoiling or being damaged. Inputs required for distribution and storage may include vehicles, climate-control equipment, fuel and energy, warehouse space, packaging, and labor.

Sales

Sales occurs at the end of the supply chain at a wide variety of establishments, from farm stands to grocery stores, fast food restaurants to hospital cafeterias. These establishments all sell food directly to individuals, either in a form they will eat immediately, in a form that will be eaten later, or in a form that will be processed further and then eaten. Inputs used by sales establishments include the food products themselves, equipment and building space, energy, labor, and packaging.

Consumer Demand

Consumer demand drives the food economy. Everyone eats, but specifically what people eat is a very complicated issue that deeply affects producers, processors, distributors and retailers.

The demand for food is economically complex because of the unique nature of food as a saleable good. On the one hand, everyone needs to consume a certain quantity of calories and nutrients every day to survive, and people can only consume a finite amount of food. As a result, the demand for food in general is very *inelastic*—that is, demand will not change significantly as prices change. On the other hand, demand for very specific food products may be very *elastic*—subject to item *substitution* as a result of small changes in price. For example, a

consumer's preference for a specific brand of cookies may be abandoned once its price rises above that of similar cookies.

This complexity arises because food in general cannot be substituted for any other good, but many types of food are substitutable for one another, in varying degrees. Food can be categorized in many ways, and items in each category may or may not be substitutable for one another. Demand for foods within very specific categories, such as brands of cookies, are likely to be much more elastic than demand for food in broader categories, such as types of meat.

Consumer perceptions play a major role in food choice, further complicating the marketplace. Peoples' attraction to food may depend on whether they perceive it to be fresh, safe, healthful, authentic, ethical, environmentally friendly, or just plain delicious. These perceptions are often subconscious and may be just as rooted in marketing, childhood association, and folk wisdom as they are in objective reality.

Sellers attempt to differentiate their food products in the marketplace by tapping into all of these perceptions. The success of the organic food industry is an example of sellers using consumers' perceptions of freshness, healthfulness, and environmental sustainability to command higher prices. Many food producers, local and non-local, have been able to command price premiums with consumers who have similar positive feelings about local food. Beginning to explore the level of market penetration of these preferences, and the extent to which they will support a local food economy, is one of the goals of this project.

Snapshot of the Agricultural Industry

National Summary

Over the last century, the agriculture industry has changed dramatically from small family farms to large-scale corporate farms. In 1900, 41 percent of the United States workforce was employed in agriculture. A century later, this number had shrunk to only 2 percent of the population.[15] In 2000, the United States' top crops in cash receipts and acreage were primarily commodity crops such as corn, soybeans, hay, wheat, cotton, sorghum, grain and rice.[16]

Summary of Oregon

In Oregon, agriculture plays a larger role in the regional and export economy compared with the US as a whole. In 2008, agriculture accounted for about $4 billion of Oregon's GDP, or 2.47 percent. Agriculture accounts for only 1.11

[15] Anne Effland, and Neilson Conklin Carolyn Dimitri, "The 20th Century Transformation of US Agriculture and Farm Policy," 1 March 2006, USDA Economic Research Service, 27 May 2010 <http://www.ers.usda.gov/publications/eib3/eib3.htm#changes>.

[16] United States Environmental Protection Agency, "United States Environmental Protection Agency," Major Crops Grown in the US, 9 February 2010 <http://www.epa.gov/oecaagct/ag101/cropmajor.html>.

percent of total U.S. GDP.[17] Nearly 40 percent of Oregon's crops were sold for export, compared to the 25 percent national average.[18]

Temperate climate and rich soils allow Oregon to produce over 250 commodity crops.[19] According to the 2007 US Census of Agriculture, nearly 27 percent of Oregon's land is currently used for farming.[20] Oregon's top crops in sales in 2008 are listed in Table 2-1 below.

Table 2-1. Top 5 Oregon Agricultural Commodities, 2008

Crop	Value of Receipts ($1000)	Percent of State Total Farm Receipts
Greenhouse/Nursery	1,011,301	23.1
Cattle & Calves	517,238	11.8
Dairy Products	408,822	9.3
Wheat	400,103	9.1
Hay	364,890	8.3

Source: Economic Research Service, USDA, 2008

Agriculture in the Willamette Valley

The Willamette Valley is Oregon's center of population and agriculture. According to the Population Research Center at Portland State University, nearly 70 percent of the state's population lives in the Valley, which also accounts for almost half of Oregon's farmland and more than half of its agricultural sales.[21] The tension between a growing population and a desire to preserve agricultural land is managed, in part, by the state's Urban Growth Boundary policy. While this policy has arguably been effective thus far, in the face of projected population growth in the Valley it is likely that more high quality agricultural soils could be lost to development. At the same time, the demand for local food is expected to continue to rise.[22]

[17] Bureau of Economic Analysis, "Bureau of Economic Analysis," BEA: Gross Domestic Product by State, 23 February 2010 <http://www.bea.gov/regional/gsp/action.cfm>.

[18] Oregon Department of Agriculture, Oregon.gov, 27 May 2010 <http://www.oregon.gov/ODA/pub_bd_rpt.shtml#Industry_Overview>.

[19] Oregon Department of Agriculture, Oregon.gov, 27 May 2010 <http://www.oregon.gov/ODA/pub_bd_rpt.shtml#Industry_Overview>.

[20] USDA Economic Research Service, USDA Economic Research Service, 9 February 2010 <http://www.ers.usda.gov/stateFacts/OR.HTM>.

[21] State of Oregon, Oregon State of the Environment: Willamette Valley Ecoregion, <http://egov.oregon.gov/DAS/OPB/docs/SOER2000/Ch4_2.pdf>.

[22] Ibid.

Local Food in the Local Economy

Problems and Barriers

Throughout the United States the percentage of food that is produced and consumed locally is very small. In 2002, it was estimated that only 0.75 percent of the food consumed in the United States was produced locally.[23] In order to encourage local food consumption, it is important to first understand why so little food consumed in the U.S. is produced locally.

Because food is primarily produced, processed, and distributed through the market, the lack of success of local foods is likely due, in large part, to economic factors. The purpose of this study is to get a better sense of what are responsible for the limited success of local foods.

Barriers to greater adoption of local food might be broadly categorized as problems with local foods' competitiveness in the marketplace. There are a number of reasons food produced locally might be less competitive than food produced elsewhere:

- **Economies of scale:** National or international farmers, producers, and distributors may be capable of running larger-scale operations than are possible on a local scale, and this may translate into a lower cost per unit.
- **Labor prices:** Food producers in other countries or other regions may have access to cheaper labor.
- **Access to infrastructure:** Local economies may lack the facilities necessary to efficiently process, store, and distribute food products.
- **Government subsidies:** Government policies may be more beneficial to producers and processors operating at a national scale.
- **Environment:** Local climate, soil types, and water availability may restrict choice of crops, reduce yields, or damage crops.
- **Convenience:** Local food products may lack the consistency of supply or quality that is available through national food distribution systems.

Solutions and Opportunities

There are many barriers to the development of a local food system, but there are also many opportunities for its expansion. Local food development strategies fall into two main categories: supply-side strategies that attempt to lower the cost of production for local food products or introduce new products, and demand-side strategies that attempt to increase the demand for local food products.

Potential supply-side strategies might include:

[23] Debra Tropp, Edward Ragland and James Barham, "Supply Chain Basics: The Dynamics of Change in the U.S. Food Marketing Environment," 2008.

- Taking advantage of local climatic or environmental advantages.
- Taking advantage of efficiencies that may occur at small or medium scales but not at large scales.
- Improving processing, distribution, and storage infrastructure.
- Taking advantage of savings on distribution costs for food produced near to where it is consumed.
- Recapturing "leakage" from the economy due to purchases of non-local food products.

Demand-side strategies may include:

- Marketing the unique advantages of local food products to differentiate them from non-local products and command higher prices.
- Educating consumers about the social and environmental benefits of local food.
- Using government (or other organizations) to promote local food.
- Labeling foods to increase consumer awareness of where food comes from.

Finally, it is important to look ahead into the future and explore how the food economy might be affected by coming changes. In particular, how might rising fuel prices affect the competitiveness of local food? What about changes in labor costs, or the price of other inputs? How might changing government regulations affect the market viability of local foods?

Conclusion

The conceptual framework described in this chapter forms the basis for understanding the current status of agriculture in Lane County, described in Chapter 3. The ideas outlined above—the importance of local food, the structure of the agricultural economy, and the place of local food within the economy—act as a lens through which to view the information about what is happening on (and in) the ground today. Furthermore, this framework of understanding acts as a foundation for the implementation strategies and business models outlined in Chapter 6.

CHAPTER 3. AGRICULTURE IN LANE COUNTY

This chapter examines the status of agriculture in Lane County by describing the current inventory of farms, crops, distributors, processors and storage facilities. This is the foundation for the supply chain analysis in Chapter IV. Please see Appendix A for detailed data referenced in this chapter.

The Agricultural Economy in Lane County

Agricultural Sales in Lane County

Agriculture is an important component of the Lane County local economy. Between 2002 and 2008, agricultural sales (including farm and forestry, nursery and livestock) increased 31 percent, from $106 million in 2002 to $140 million in 2008.[24] Farms in the county tapped into the expanding grass seed and nursery market, in addition to diversifying their food crops. In 2009, however, the agricultural industry saw a stark decline. The combination of the national economic downturn, the saturated grass seed market and the collapse in the housing market brought sales down 18 percent in Lane County in 2009 to $115 million in sales. The state of Oregon experienced a similar overall decline, dropping 17 percent in agricultural sales between 2008 and 2009.

Jobs in the Local Food Supply Chain

Local food production supports a number of different industries, including producers, distribution and transportation centers, food processors, storage facilities and grocery stores. The wide range of employment sectors is valuable to the local economy because it supports jobs with varying skill sets and both urban and rural settings.

The local food industry accounted for over six percent of the jobs in Lane County in 2009. Table 3-1 below details many of the employment industries in the local food supply chain. It is important to note that this is not the complete picture of the local food economy. Other industries that could be affected by local food production are food packaging suppliers, for example.

[24] *Oregon Agricultural Information Network*. Oregon State University, n.d. Web. 28 May 2010. <http://oain.oregonstate.edu/>.

Table 3-1. Lane County Food Industry Employment, 2009

NAICS Code	Industry	Average Pay 2009	# of Jobs 2009	% of Total Jobs 2009
111	Crop Production	$27,101	595	0.4%
112	Animal Production	n/a	n/a	n/a
113	Forestry and Logging	$32,258	530	0.4%
114	Fishing, hunting and trapping	n/a	n/a	n/a
115	Agriculture and Forestry Support Activity	$23,960	291	0.2%
311	Food Manufacturing	$37,754	1,497	1.1%
312	Beverage & Tobacco Manufacturing	$26,498	360	0.3%
4244, 4245	Grocery Wholesaler; Farm Product Raw Material Wholesaler	$39,470	793	0.6%
445	Food and Beverage Stores	$21,416	3,920	2.9%
48422	Specialized Freight (except used goods) Trucking, Local	$38,481	435	0.3%
48423	Specialized Freight (except used goods) Trucking, Long-Distance	$40,074	27	0.0%
493	Warehousing and Storage*	$37,239	12	0.0%
Total	**(Average pay)**	**$32,425**	**8,460**	**6.2%**

Source: Oregon Employment Department
*Industry code includes non-food related business

Production Trends

Local Food Movement in Lane County

Chapter 2 provided insight into trends that support an increase in local food production in Lane County. There are a number of key institutions that are contributing to the effort of re-localizing food production.

Hummingbird Wholesale is a local food distribution business that is contributing significantly to the local food movement. Hummingbird Wholesale engages in Distributor Supported Agriculture (DSA), a system in which the distributor pays some up-front cost in exchange for the farmer producing a certain product that Hummingbird Wholesale will purchase when harvested.

The Willamette Farm and Food Coalition's (WFFC) Farm to School Program focuses on increasing the amount of local food in the area school districts by connecting local farmers with food purchasing agents in each school district. WFFC also publishes an annual Locally Grown guide to connect consumers with farmers.

The Bethel School District has received national attention for their efforts to bring more local food into their daily menus. The USDA made a site visit to Bethel in May 2010 to understand more about Bethel's success in incorporating local food into the schools.

The Southern Willamette Valley Bean and Grain Coalition has been instrumental in the movement behind producing bean and wheat crops on the Lane County

region. Their research and test sites have provided information regarding what bean and grain crops can be most successful in the Southern Willamette Valley.

Number of Farmers Markets in Lane County

Farmers markets are popular community attractions. The USDA has tracked the total number of farmers markets operating in the U.S. since 1994. There has been a steady increase in the number of markets opening each year. Between 2008 and 2009 there was a 13 percent increase in farmers markets across the U.S., from 4,685 to 5,274.[25] According to the Oregon Farmers' Market Association, there are a total of nine farmers markets in the Lane County area. Most of these are located within the Eugene-Springfield metropolitan area.[26] In 2007, Northwest consumers spent $10 per capita on farm-direct sales, which is 2.5 times greater than the national average of $4.[27]

Other Trends

Over the past decade, Community Supported Agriculture (CSA) has been an emerging trend. The USDA defines CSA as, "a community of individuals who pledge support to a farm operation so that the farmland becomes, either legally or spiritually, the community's farm, with the growers and consumers providing mutual support and sharing the risks and benefits of food production."[28] The community members provide financial support to the farmer who, in return, provides the harvested crops to the community.

Distributor Supported Agriculture (DSA) is modeled after CSA and is a business model that Hummingbird Wholesale and other local distributors are using. With DSA, a distributor contracts with a farmer to pay the cost of producing a specified crop. In the model Hummingbird is using, farmers are paid an upfront cost per acre for purchase of a crop. In some instances Hummingbird even pays for the seeds. Once the crop is harvested, the distributor purchases the crop based on the contract established at the beginning of the process. In Lane County, Hummingbird Wholesale is using the DSA model on over 100 acres of land this year. This is providing over $300,000 of revenue to local farmers.

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[25] "Markets and Local Food Marketing." *Agricultural Marketing Service*. USDA, 05 Nov 2009. Web. 31 May 2010. <http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateS&navID=WholesaleandFarmersMarkets&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers%20Market%20Growth&acct=frmrdirmkt>.

[26] "OFMA Farmer's Market Directory." Oregon Farmer's Market Association, n.d. Web. 31 May 2010. <http://www.oregonfarmersmarkets.org/directory/directory.html#WV>.

[27] "Comparing the Structure, Size and Performance of Local and Mainstream Food Supply Chains." *Economic Research Service.* USDA. Web. June 2010.

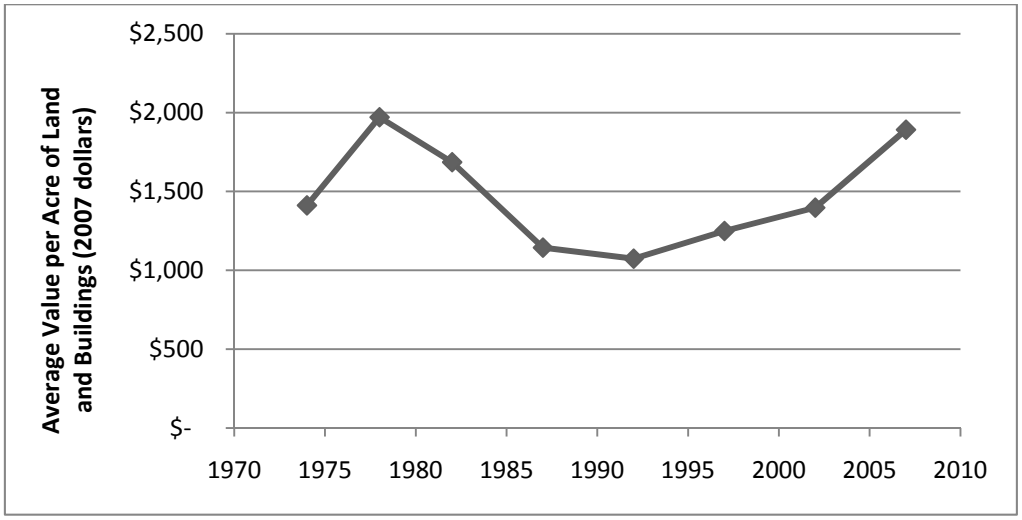
[28] "Defining Community Supported Agriculture." *Alternative Farming Systems Information Center*. USDA National Agricultural Library, n.d. Web. 31 May 2010. <http://www.nal.usda.gov/afsic/pubs/csa/csadef.shtml>.

Farms in Lane County

As of 2007, Lane County had 245,531 acres in farmland, or 1.5 percent of Oregon's total farmland. This is approximately 8.4 percent of the county's total land area (see Appendix A, Table A-1).[29]

The value of farmland in Lane County has seen a significant increase in the last decade, rising to an average market price of almost $1,900 per acre. This marks a reversal of the trend of the 1980s and early 1990s, in which the value of farmland in Lane County plummeted from a high of almost $2,000 per acre (in 2007 dollars) in 1978 to a low of less than $1,100 in 1992.[30] Figure 3-1 shows the changing value of Lane County's agricultural land from 1974 to 2007.

Figure 3-1. Historic Value of Lane County Farmland



Source: US Census of Agriculture, 2007

Farms in Lane County increased in number and total acreage between 1997 and 2007 (see Appendix A, Table A-1). Between 2002 and 2007, the number of acres in farmland increased four percent, while the number of farms increased 29 percent.[31] In 2007, 75 percent of Lane County farms were smaller than 50 acres, with the median farm size at 17 acres (average farm size is 74 acres). Over 60 percent of the farms in Lane County yielded less than $2,500 in sales in 2007, and 87 percent were family-owned.[32]

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[29] United States. 2007 Census of Agriculture: Oregon State and County Data. , 2009. Web. 31 May 2010. <http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/orv1.pdf>.

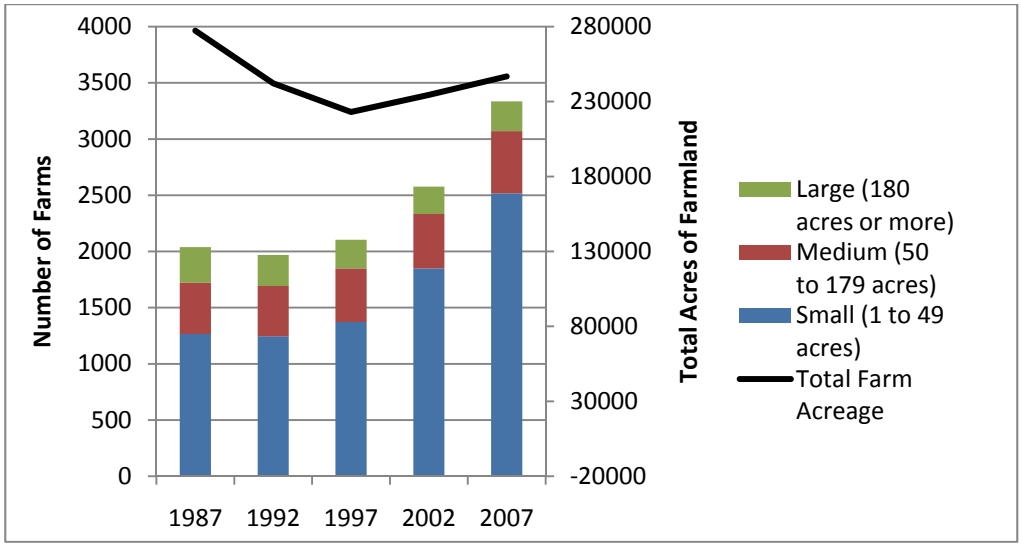
[30] United States. *2007 Census of Agriculture: Oregon State and County Data*. , 2009. Web. 31 May 2010. <http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/orv1.pdf>.

[31] Ibid.

[32] Ibid.

Figure 3-2 shows the trends in farm size and total acreage in Lane County since 1987. Over the past twenty years, Lane County has seen a trend towards more, smaller farms. The number of farms smaller than 50 acres has almost doubled since 1987, and these farms represented over two-thirds of all farms by 2007. Furthermore, although the county lost farmland from 1987 to 1997, the total acreage of farms has increased since then.[33]

Figure 3-2 Farm Size in Lane County, 1987-2007



Source: US Census of Agriculture, 2007

Crop Production in Lane County

The crop data in the following section was gathered from the Oregon Agricultural Information Network (OAIN), a data source produced annually by the Oregon State Extension Program.[34]

Non-Food Crops in Lane County

The Willamette Valley is home to nearly 1,500 grass seed farms and is considered the "grass seed capital of the world."[35] However, grass seed was only introduced to the valley as a crop in the 1920s, and the industry did not start growing until the 1940s.[36] Since that time, grass seed has replaced many of the food crops that were traditionally grown in the valley, particularly wheat. Figure 3-3 shows acres of crops grown by crop type in the Willamette Valley between 1976 and 2006.

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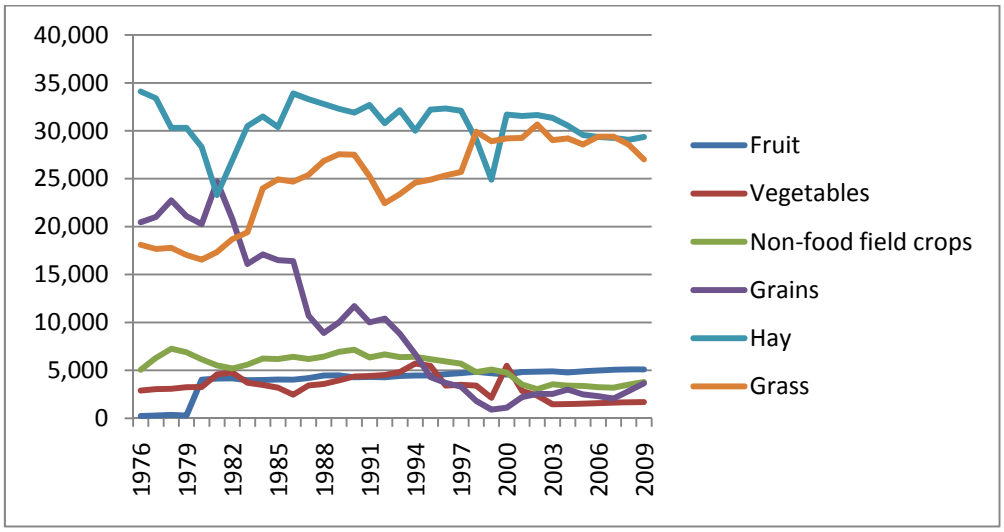
[33] Ibid.

[34] *Oregon Agricultural Information Network*. Oregon State University, n.d. Web. 28 May 2010. <http://oain.oregonstate.edu/>.

[35] "Grass Seed - Willamette Valley Field Crops." Oregon State University, 06 Jun 2009. Web. 16 May 2010. <http://oregonstate.edu/valleyfieldcrops/grass-seed>.

[36] Ibid.

Figure 3-3. Lane County Crop Trends in Acres, 1976-2008

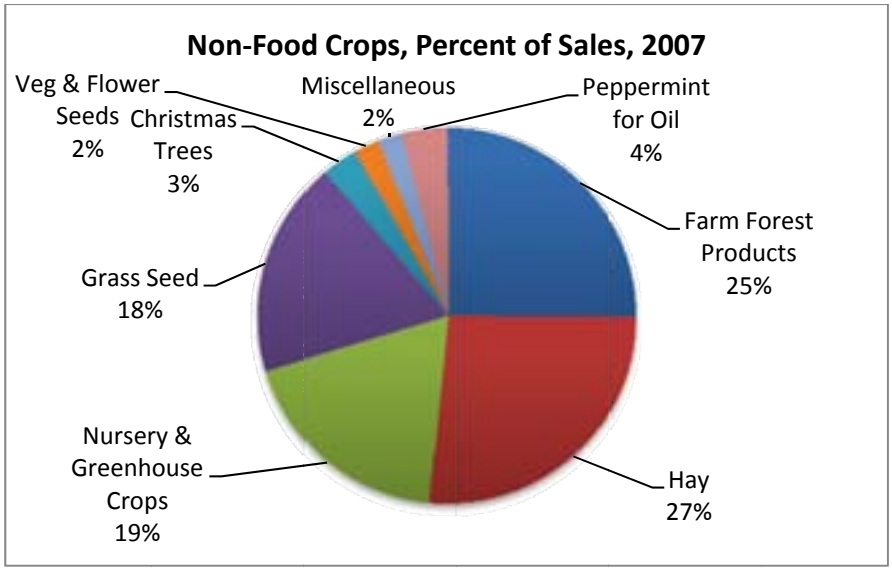


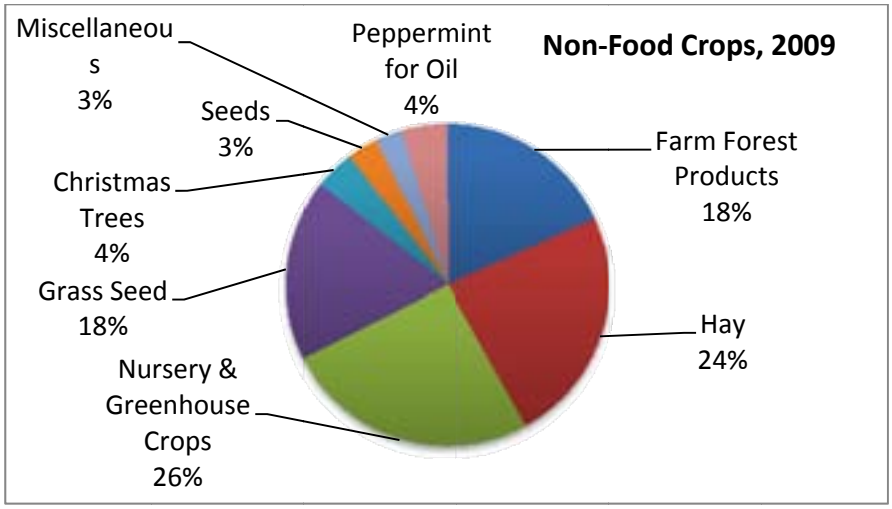
Source: Oregon Agricultural Information Network

Lane County has experienced these same trends. In 2007, non-food crops accounted for 56 percent of Lane County's agricultural sales. Figure 3-4 shows that forest products accounted for the largest percentage of non-food crop sales at 25 percent of the total non-food crops in 2007, while nursery crops and grass seed were second and third at 19 percent and 18 percent of total non-food crops respectively. Since 2007, however, the forest and grass seed industries have seen substantial decline. In the latest reports from the OAIN in 2009, the farm forest products sales were down from $19.5 million in sales in 2007 to $10 million in 2009, at only 18 percent of total non-food crop sales. Grass seed sales were down from $13.3 million in 2007 to $8.9 million in 2009, at only 17 percent of total agricultural sales. In conjunction with the housing industry, nursery and greenhouse sales also decreased from $14.6 million in 2007 to $13.9 million in 2009, even though the percent of total non-food crop sales actually increased.[37]

[37] *Oregon Agricultural Information Network*. Oregon State University, n.d. Web. 28 May 2010. <http://oain.oregonstate.edu/>.

Figure 3-4. Non-Food Crops as Percent of Sales, Lane County, 2007 and 2009





Source: Oregon Agricultural Information Network. See Appendix A-7 for additional details.

The near term outlook for a recovery in the non-food crop market is not good. New housing starts, which drive demand for grass seed, have slumped in recent years, and as a result, Willamette Valley farmers have a two year supply of stored grass seed intended for export.[38]

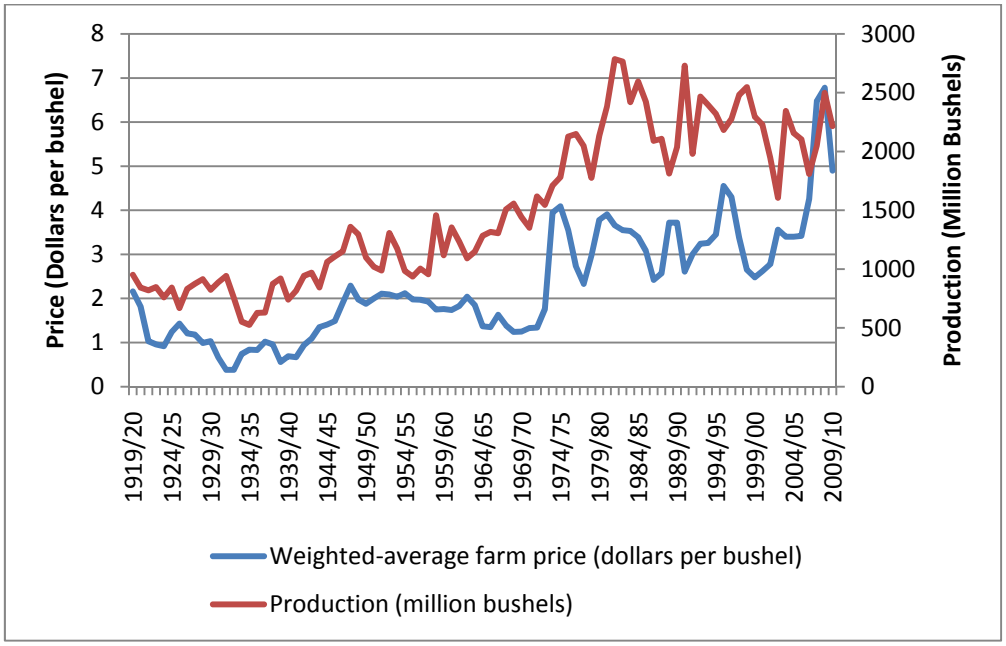
Declining prices in the grass seed market have led some local farmers to look to alternative crops, particularly wheat.[39] Meanwhile, wheat prices have skyrocketed

[38] Lies, Mitch. "Grass seed price outlook not pretty." Capital Press 18 Mar 2010: n. pg. Web. 17 May 2010. <http://www.capitalpress.com/specialsection/seed/ml-grass-seed-market-022510-p-12>.

[39] McDonald, Sherri. "Going with the Grain: As grass seed prices fall, more local farmers turn to wheat." *Eugene Register-Guard* 08 Aug 2009, Print.

in recent years (see Figure 3-5 below). As a result, between 2007 and 2009, wheat sales jumped 87 percent in Lane County. Although converting grass seed fields to an alternative crop is difficult, some farmers are turning to wheat due to increased demand caused by poor crop yield in other parts of the world.[40]

Figure 3-5. Wheat Prices and Production in the United States, 1919-2008



Source: "Wheat: Planted acreage, harvested acreage, production, yield, and farm price." USDA Economic Research Service, 20 May 2010. Web. 31 May 2010. <http://www.ers.usda.gov/data/wheat/YBtable01.asp>.

The nursery industry is one of Oregon's oldest industries. Since the earliest orchards planted in the mid- 19th century, it has steadily grown, and is currently the largest component of Oregon's commodity agriculture by dollars.[41] Nursery and greenhouse crop sales in Oregon in 2007 were above $1 billion.[42] Figure 3-6 details the increasing trend in nursery sales in Oregon between 1990 and 2006.

However, the housing slump and rising transportation costs have taken a toll on this segment of agriculture.[43] Since reaching the $1 billion mark, sales have

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[40]"Oregon Farm Sales Drop, 2010 May Not Be Better" *Oregonian* February 9, 2010. Retrieved February 15, 2010. http://www.oregonlive.com/business/index.ssf/2010/02/oregon_farm_sales_drop_2010_ma.html

[41] O'Connor, Pat. "Oregon's Nursery Industry: A History of Growth." Oregon Labor Market Information System. Oregon Employment Department, 22 Jul 2008. Web. 17 May 2010. <http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00006044>.

[42] Ibid.

[43] Holman, James. "Oregon nurseries, greenhouses face thorny path." Oregonian 18 Jul 2008, Print.

slumped, and many growers have gone bankrupt.[44] Sales were down to $820 million in 2008, a drop of nearly 17 percent.[45]

Although Lane County nurseries and greenhouses do not have the same scale as their counterparts in the northern part of the Willamette Valley, there are a significant number of operations (see Figure 3-7). In 2007, Lane County had 150 nursery and greenhouse businesses, growing a total of 850 acres, with gross sales of $133 million, up 135 percent from 2006.[46]

Figure 3-6. Nursery and Greenhouse Summary by County, 2005-2007[47]

County	Number of operations	Acres	Gross sales			
	2007	2007	2005	2006	2007	2007 / 2006
	Operations	*Acres*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*Percent*
Clackamas	530	13,300	206,500	212,500	212,700	100
Curry	20	250	3,700	4,200	3,625	86
Deschutes	40	300	3,800	4,600	4,700	102
Douglas	50	600	3,900	3,900	4,500	115
Jackson	70	125	3,300	3,700	3,500	95
Josephine	50	200	2,800	2,800	3,600	129
Klamath	20	1,700	17,500	20,900	17,500	84
Lane	150	850	24,500	24,500	33,000	135
Linn	80	800	15,300	16,900	18,200	108
Marion	350	15,000	194,800	230,900	238,000	103
Multnomah	170	5,000	46,600	47,000	55,000	117
Polk	50	1,500	9,700	9,700	10,500	108
Umatilla	20	600	8,000	9,600	8,000	83
Washington	250	7,000	193,300	212,600	197,000	93
Yamhill	110	5,500	110,100	125,700	143,000	114
Other counties [1]	140	975	33,200	36,500	35,175	96
Oregon	**2,100**	**53,700**	**877,000**	**966,000**	**988,000**	**102**
Top five counties [2]	1,410	45,800	751,300	828,700	845,700	102

[1] Contains counties with less than two million dollars of sales and counties that were combined to avoid disclosure of individual operations.
[2] Top five counties include: Clackamas, Marion, Multnomah, Washington, and Yamhill.

Source: Oregon Nursery and Greenhouse Survey 2007

Food Crops in Lane County

In 2007, food crops accounted for 44 percent of Lane County's agricultural sales, which brought over $34 million into the local economy.[48] Figure 3-8 shows that livestock and dairy products accounted for the sector's largest sales in Lane

[44] Haight, Abby. "Oregon nursery industry hits historic slump." SFGate.com. Associated Press, 21 Feb 2010. Web. 17 May 2010. <http://articles.sfgate.com/2010-02-21/news/17949762_1_nursery-stock-jennifer-nelis-wholesale-nursery/2>.

[45] Ibid.

[46] United States. Oregon Nursery and Greenhouse Survey 2007. , 2008. Web. 17 May 2010. <http://www.nass.usda.gov/Statistics_by_State/Oregon/Publications/Horticulture/nursery2008.pdf>.

[47] United States. Oregon Nursery and Greenhouse Survey 2007. 2008. Web. 17 May 2010. <http://www.nass.usda.gov/Statistics_by_State/Oregon/Publications/Horticulture/nursery2008.pdf>.

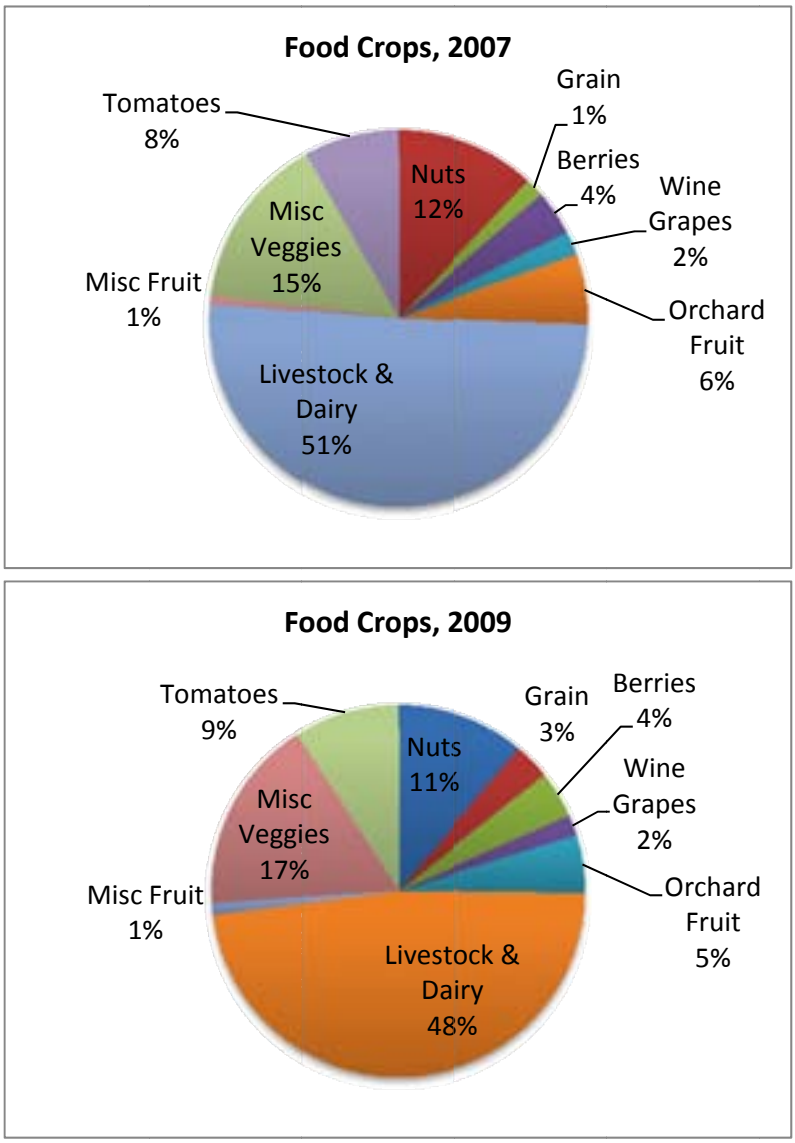
[48] *Oregon Agricultural Information Network*. Oregon State University, n.d. Web. 28 May 2010. < http://oain.oregonstate.edu/CountyReport-Detail.asp?ddOpt=3&sYr=2007&sCounty=Lane>.

County. Miscellaneous vegetables came in second at 15 percent of sales in 2007. Nuts, namely hazelnuts, were third in sales in 2007 at 12 percent of total.

Consistent with the decline in production of non-food crops, the total food crops as a total of agricultural sales increased to 54 percent in 2009. This yielded over $36 million in sales in the county.[49] This is due in part to grass seed farmers switching to grain and other food crops as the grass seed market became saturated. Although livestock sales decreased in that time period, tomatoes, miscellaneous vegetables and grain all increased in sales.

[49] Ibid.

Figure 3-7. Food Crops as Percent of Sales, Lane County, 2007 and 2009



Source: Oregon Agricultural Information Network. See Appendix A-6 for additional details.

Overview of Processing Centers in Lane County

Lane County is home to 55 food manufacturing businesses and employs 1,498 people in 2009.[50] Although many of the processors in Lane County and the Willamette Valley historically canned agricultural products grown in the region, today most of those canneries are gone. Agripac, a grower's cooperative that processed agricultural products from the valley, went bankrupt at the turn of the millennium. As a result, many Lane County farmers moved away from food

[50] Oregon Employment Department, 2009. Web. 11 August 2010. http://www.qualityinfo.org/olmisj/CEP?action=summary&areacode=04000039&indtype=N&periodcode=01002009&submit=Continue

production altogether.[51] There are a few food processors remaining in the valley, most significantly Stahlbush of Corvallis. However, the business model is unique, as Stahlbush functions as both grower and processor, sourcing the majority of their product from their 5,000 acres of farmland. In general, very limited comprehensive information about food processors and their capacity is available.

Despite the loss of much of the canning and preserving capacity in Lane County, it still boasts a number of processors that produce value-added products such as salsas, dips, and cereals. These processors have typically entered niche markets and thrived, resulting in national or regional distribution for some. However, unlike the canneries that once existed in the county, most of these processors are not always sourcing local ingredients. Those interviewed as part of this study have expressed a willingness to use local products as part of their ingredient base, but at this time there are quality, price, and capacity issues that prevent them from doing so.

Overview of Storage Centers in Lane County

There are 11 warehousing and storage establishments in Lane County, although CPW was unable to all out the number of these establishments that were solely food related.[52] In 2009, this industry employed 120 people in Lane County. Although this study did not gather specific information on the history of food storage in Lane County, interviewees discussed the significant food storage that existed during the first part of the 20th century, when Lane County farms were primarily oriented toward serving a local market.[53] Current storage capacity for food crops in Lane County is relatively low. While comprehensive data are not available, interviewees indicated a lack of storage facilities, particularly for wheat. The increased focus on global markets and expansion of just-in-time inventories has resulted in less storage overall and more storage occurring in the area of the Port of Portland. The loss of food processing capacity in the Willamette Valley and consolidation in the larger market has also affected storage capacity for food crops in Lane County. Whatever the cause, the result is that most storage occurs on a short-term basis within the structure of food processors or distributors. The exception to this is Sno-Temp, formerly Eugene Freezing and Storage. This company serves local growers and processors, as well as national distribution networks. They have expressed interest in growing the market for local food, and have some capacity to expand to meet demand.

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[51] Ross Penhallegon, in “Advisory Council to Focus on Food”. Eugene Register-Guard, May 15, 2005.

[52] Oregon Employment Department, 2009. Web. 10 August 2010. http://www.qualityinfo.org/olmisj/CEP?action=summary&areacode=04000039&indtype=N&periodcode=01002009&submit=Continue

[53] Smith, Kara, *The Lane County Food Policy Council and Reframing Food Security*, thesis, University of Oregon, 2008. Web.

Overview of Distribution Centers in Lane County

Food distribution in Lane County remains strong. In 2009, there were 41 businesses in food distribution that employed 793 people.[54] The county is home to local companies of varying scales, and also hosts national and regional retail chains that source products through their own distribution service outside of the county. Detailed information about the characteristics of these distribution operations was not available, but CPW learned about some characteristics of these operations through interviews with the distributors and people who work with these distributors. Distributors local to Lane County tend to be more responsive and agile when it comes to incorporating local products, due to the scale of their operations and their proximity to farms. Each of the local distributors interviewed expressed interest in expanding their palette of locally grown foods, though there are still barriers, most notably pricing.

Conclusion

The local food movement is gaining momentum in Lane County. The number of acres in farmland has increased four percent between 2002 and 2007. The number of farms has also increased 29 percent in the same time period. Farms in Lane County tend to be relatively small in operation, with 75 percent at less than 50 acres.

With the downturn in the housing industry, farmers are transitioning away from traditional grass seed and nursery production and turning to wheat and other food products. Food crops jumped from 44 percent of total production in 2007 to 54 percent in 2009. With the upturn in food production in Lane County, there is a need for local processing, distribution and storage facilities that will be addressed in Chapter 6.

[54] Brian Rooney, Oregon Employment Department. Personal Information. Email 21 May 2010. Oregon Employment Department, 2009.

CHAPTER IV. LOCAL DEMAND FOR FOOD

This chapter analyzes trends in the demand for conventional and local food at the national and local level. The demand for local food in Lane County is understood by outlining institutional demand for conventional and local food. The demand for individual focus crops is then outlined to understand the market potential for each crop. Understanding the demand analysis for food (in general) and local food (specifically) reveals the market potential for local food consumption and production in Lane County.

Framework for the Demand Analysis

The total market for food is an aggregate of supply and demand curves for thousands of food items, all of which interact in highly complex and often unpredictable ways. This suggests the difficulty in analyzing any food system. Analysis of food systems at local scales is further complicated by frequently non-existing or incomplete data.

The complexity of the food market is a reality, but it does not obviate the need for some type of demand assessment, and for an evaluation of the implications of that forecast for consumption. Such assessments are inherently uncertain, but can be both necessary and useful. The following section describes key concepts related to demand that CPW considered in the overall demand analysis.

Economic Concepts

The remainder of this chapter relies on some basic economic concepts. These are defined below.

- **Demand**: Demand is a measure of the quantity of a given product desired or needed by consumers. Demand is the driving force behind economies and helps to determine how much of a product is produced and the price of that product.
- **Seasonality**: Seasonality can also affect the cycle of demand, particularly for food. When food is in season, supply is greater, which generally decreases price. This price change may in turn affect demand.
- **Price Elasticity of Demand**: Price elasticity is a "measure of the responsiveness of demand to a change in price."[55] If a given change in the price of a product prompts a proportionally greater change in the quantity demanded of that product, the product is price elastic. If the same change

[55] "Commodity and Food Elasticities: Glossary." *Economic Research Service*. U.S. Department of Agriculture, 16 Sept. 2009. Web. 1 June 2010.

prompts a proportionally *smaller* change, the demand for the product is price inelastic.[56]

- **Substitution:** Substitute goods are goods that consumers can use to satisfy the same purpose. For example, butter and margarine are substitute goods.
- **Cross-Price Elasticity of Demand**: Another useful metric is cross-price elasticity of demand. Cross-price elasticity is similar to price elasticity, but it refers to the effect that the change in another product's price has on the demand for a product.[57]

Discussion of Sources

This chapter contains quantitative and qualitative demand information gathered from a range of sources. National per capita consumption data was obtained from the Bureau of Labor Statistics (BLS) Consumer Expenditure Survey and from the USDA Economic Research Service (ERS). Various trade journals were used to understand national grocery store trends, including trends in health, organic food and shelf space allocation. Further information was gathered on current and projected household food budgets from the Bureau of Labor Statistics and the USDA Economic Research Service Consumer Expenditure Reports.

Local qualitative demand data was gathered through interviews with local processors, distributors, storage facilities, grocery stores, a school district, and hospitals to understand the current supply and demand factors affecting the local market. Additional local demand information came from Ecotrust's online database, FoodHub, and a 2006 survey of institutional buyers completed by The Good Company. This information has been summarized in the sections below.

Trends in Demand

Recent trends in food consumption are reflected in demand data. Understanding these trends can help frame understanding of this data. These trends include:

Farm to School: National, state and local programs are promoting local food consumption in K-12 schools. The Farm to School program is the most widely known national program. It works in 49 states to influence state policy regarding local food systems, support schools in obtaining food locally, and provide training, networks and technical support for school administrators, families, farmers and

[56] For example, if a 50 percent increase in the price of apples prompts a 20 percent decrease in the amount of apples purchased, demand for apples is price inelastic. In aggregate, demand for food is inelastic: it is a basic necessity. But demand for any given item may be elastic due to substitution.

[57] Consider the example of how the price of strawberry jam might affect the demand for raspberry jam. Strawberry jam and raspberry jam are (to some extent) substitutes, so we can expect an increase in the price of strawberry jam to prompt an increase in the demand for the now relatively cheaper raspberry jam. If the increase in demand for raspberry jam is greater than the increase in price of strawberry jam, then raspberry jam is cross-price elastic with respect to strawberry jam.

community members.[58] Oregon is one of the few states with a Farm to School coordinator positions in the state government, both in the Oregon Department of Education and the Oregon Department of Agriculture. Locally, the Farm to School program is coordinated with the Willamette Farm and Food Coalition. Springfield, Eugene 4-J and Bethel School districts are enrolled. Recently, Eugene 4-J and Bethel have received national recognition for their innovative strategies toward increasing local food consumption in the schools.[59]

Organic Food: For the past ten years the U.S. has seen a dramatic increase in national consumption of organic food.[60] According to a study conducted by the Organic Trade Association in 2007, organic food is the fastest growing food sector at 2.8 percent of total food sales. Total U.S. organic sales, including food and non-food products, were $17.7 billion in 2006, up 21 percent from 2005. They reached $21.2 billion in 2007, and are projected to reach $25 billion in 2008.[61] The USDA's recent "Know Your Farmer" campaign released $20 million in grants to Universities around the country to research how to develop more and cheaper organic food.[62] This increase is driven by the perception that organic food tastes better, is of higher quality, and is healthier.[63]

USDA Support: National support for local food is now formalized through a number of avenues. The United States Department of Agriculture (USDA) has a Community Food Projects Grant to help strengthen local food systems for the purpose of food security.[64] It also has a 'Farm to School' program to support consumption of local food in schools, and it has also recently initiated a new 'Know Your Farmer, Know Your Food' program to encourage local food consumption.[65]

Grocery Store Trends: Consumers are motivated by many factors when making food purchasing decisions. While quality, food safety and health benefits are key factors, studies demonstrate that "civic and society-focused statements" are an

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[58] "Farm to School: Nourishing kids and the community." FarmToSchool.com. Occidental College Urban and Environmental Policy Institute, n.d. Web. 1 June 2010.

[59] Williams, Anne. "Local Foods go to School." Register Guard [Eugene, OR] 16 April 2010: All. Web Retrieved May 11, 2010.

[60] Barkley, Andrew. "Organic Food Growth: Producer Profits and Corporate Farming," For presentation at the 2002 Risk and Profit Conference, Department of Agricultural Economics, Kansas State University, Manhattan, Kansas, August 15-16, 2002.

[61] "Industry Statistics and Projected Growth." ota.com. Organic Trade Association. 29 July 2008. Web. 1 June 2010.

[62] Natural Food Merchandiser Staff. "What's Next in Naturals: February 2010." *Natural Food Merchandiser.* 28 January 2010. Web. 1 June 2010.

[63] Lohr, Luanne, "Factors Affecting International Demand And Trade in Organic Food Products," in Changing Structure of Global Food Consumption and Trade / WRS-01-1, Economic Research Service/USDA, 2001.

[64] USDA. "USDA Resources for Local Food Systems." usda.gov. USDA, 18 March 2009. Web. 1 June 2010.

[65] USDA. "Farm To School." usda.gov. USDA, 26 April 2010. Web. 1 June 2010.

increasing factor driving purchasing decisions.[66] Increasingly, as local food gains recognition, consumers are demonstrating their support through prioritizing food purchasing around local produce. This trend is verified locally through interviews with grocery store produce managers, some of whom are using 'Buy Local' campaigns to promote local produce in their stores.

The 1990s showed a trend toward mass retailers and warehouse superstores infiltrating the grocery store market and threatening the existence of small and local grocery stores. According to one report from the Food Marketing Institute, mass retailers were able to offer competitive products at nearly 26 percent lower than smaller grocery stores.[67] By 1999, five top food chains controlled nearly 29 percent of the industry sales.[68] In recent years, however, the trend has been slowly shifting back toward smaller more specialized grocery stores.[69]

Farmers Markets: Nationally, the number of farmers markets tripled between 1994 and 2009 from 1,755 to 5,274.[70] Farmers markets are traditionally an opportunity for consumers to purchase produce directly from local and regional producers. Surveys show that nine percent of consumers report buying the majority of their produce from farmers markets.[71] Consumers who shop at farmers markets report that their purchasing habits are motivated by a desire to support the local economy and protect farmland.[72]

Consumer Health Consciousness: Food scares such as E. Coli and salmonella outbreaks have increased awareness of the potential risks associated with large-scale industrial food production and processing.[73] Since the majority of these publicized outbreaks originate in large factory farms or processors, some consumers believe local food has a reduced risk of these health risks. One survey

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[66] McFadden, Dawn Thilmany, Nurse, Gretchen and Yuko Onozaka. "Local Food Consumers: How Motivations and Perceptions Translate to Buying Behavior." Choice Magazine. Agriculture and Applied Economic Association. n.d. Web. 1 June 2010.

[67] Guptill, Amy and Jennifer L. Wilkins. "Buying into the food system: Trends in food retailing in the US and implications for local foods." *Agriculture and Human Values* 19: 39-51, 2002.

[68] Ibid.

[69] Ibid.

[70] USDA Agricultural Marketing Service. "Farmers Market Services." Web. 16 July 2010. http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5080175&acct=frmrdirmkt

[71] McFadden, Dawn Thilmany, Nurse, Gretchen and Yuko Onozaka. "Local Food Consumers: How Motivations and Perceptions Translate to Buying Behavior." Choice Magazine. Agriculture and Applied Economic Association. n.d. Web. 1 June 2010.

[72] Ibid.

[73] Lohr, Luanne. "Factors Affecting International Demand And Trade in Organic Food Products," in Changing Structure of Global Food Consumption and Trade / WRS-01-1, Economic Research Service/USDA, 2001.

found that consumers rank local food higher in terms of "freshness, eating quality, food safety, and nutritional values."[74]

National Demand for Food

In 2007, Americans spent over $700 billion on food,[75] or $2,453 per capita,[76] an amount that has been steadily rising in inflation-adjusted terms since at least the 1930s (see Figure 5-1). This amounts to 10.1 percent of disposable household income, a proportion that has been steadily declining since the 1940s (see Figure 4-1).[77] Of this 10.1 percent, 5.7 percent ($1,386 per capita) was spent on food at home, and 4.4 percent ($1,067 per capita) on food away from home. In the Western region of the United States, people generally spend more money on food ($2,620 per capita), and food spending accounts for a slightly higher percentage of income (10.3 percent).[78] The Western region of the U.S. spent over 12 percent of their household budgets on food (See Figure 4-2).

There is a certain degree of income elasticity of demand for food; in the U.S., higher-income groups tend to spend slightly more on food (although food spending accounts for a smaller percentage of their income). In particular, they spend more on food away from home, suggesting that demand for food away from home is more elastic than food at home.[79]

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[74] McFadden, Dawn Thilmany, Nurse, Gretchen and Yuko Onozaka. "Local Food Consumers: How Motivations and Perceptions Translate to Buying Behavior." Choices Magazine. Agriculture and Applied Economic Association. n.d. Web. 1 June 2010.

[75] "Table 8: Region of residence: Average annual expenditures and characteristics." *2007 Consumer Expenditure Survey*. U.S. Bureau of Labor Statistics, 2007. Web. 1 June 2010.

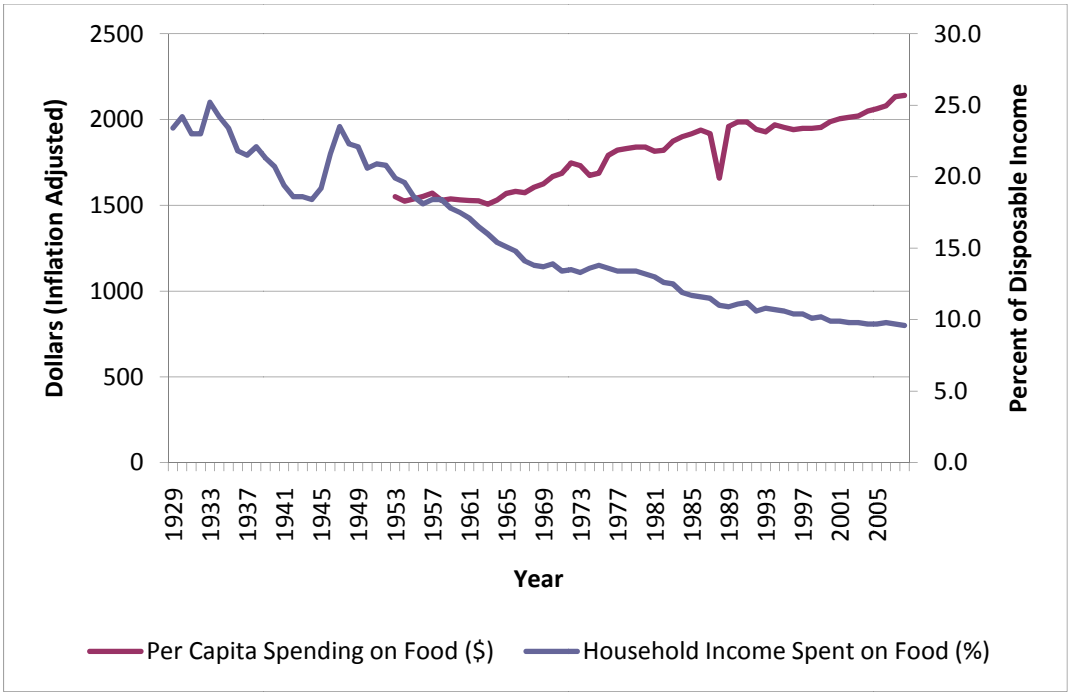
[76] "B01003. Total Population – 2005-2007 American Community Survey 3-Year Estimates." *American Fact Finder.* U.S. Census Bureau, 2007. Web. 1 June 2010.

[77] "Table 7: Food CPI and Expenditures." *Economic Research Service.* U.S. Department of Agriculture, 17 June 2009. Web. 1 June 2010.

[78] Per capita statistics were calculated by dividing the BLS statistics—which are per "consumer unit"—by the average size of a consumer unit (2.5 people nationally, and 2.6 for the West). Percent of income statistics were calculated by dividing these amounts by the average per capita after-tax income, also from the BLS.

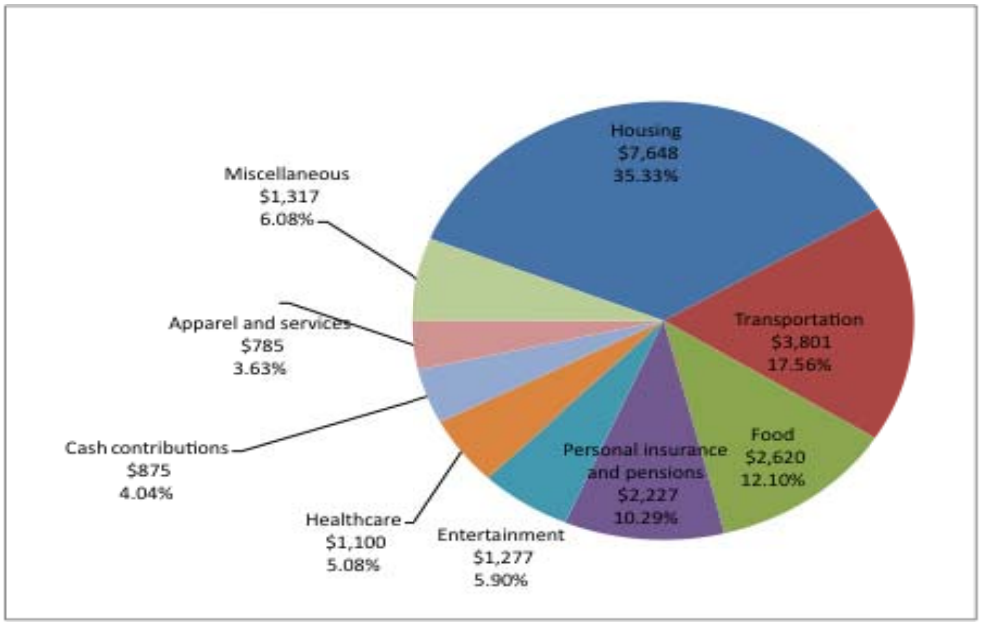
[79] "Comparing food expenditures by income group." *TED: The Editor's Desk*. U.S. Bureau of Labor Statistics, 25 Aug. 1999. Web. 1 June 2010.

Figure 4-1. National Food Expenditures as a Share of Disposable Personal Income



Source: "Table 7: Food CPI and Expenditures." Economic Research Service. U.S. Department of Agriculture, 17 June 2009. Web. 1 June 2010.

Figure 4-2. 2007 Per Capita Consumer Expenditures – Western Region



Source: "Table 8: Region of residence: Average annual expenditures and characteristics." *2007 Consumer Expenditure Survey*. U.S. Bureau of Labor Statistics, 2007. Web. 1 June 2010.

Household Demand

Overall Budget Breakdown

The average American household spends 10 percent of their disposable income on food.[80] In 2005, this meant an average food expenditure of about $60-$70 per person per week, depending on household size and number of wage earners.[81]

In 1998, 52 percent of primary food preparers indicated that they were on a strict food budget,[82] and as recently as January 2010, the USDA reported that 15 percent of all households are food insecure. There are income differences in household food budget according to income level; higher-income groups tend to spend slightly more in total on food than lower-income groups, but a smaller share of their total income goes toward food.[83] Also, larger households tend to have a lower per-capita demand for food.[84]

Eating Location Breakdown

Since the 1980s, food consumed away from home has increased in the U.S.[85] In 2008, 12.8 percent of household expenditures were for food, breaking down into 7.4 percent spent on food at home, and 5.3 percent spent on food away from home. Younger people tend to spend a larger proportion of their income on food in general, and older people tend to spend a smaller percentage of their income on food away from home.[86] Higher income groups tend to spend more per person on food away from home, but about the same on food at home as lower income groups.[87]

A 2008 national survey of food consumption habits found that 11 percent of consumers report farmers markets and direct purchases from farmers as their

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[80] "Table 8: Region of residence: Average annual expenditures and characteristics." *2007 Consumer Expenditure Survey.* U.S. Bureau of Labor Statistics, 2007. Web. 1 June 2010.

[81] Jennifer Maiser. "Announcing the Penny-Wise Eat Local Challenge." *Eat Local Challenge.* Eat Local Challenge, 20 Mar. 2007. Web. 1 June 2010.

[82] Matthew Klein. "Vittles on a budget." *American Demographics* (Jan. 1998): n. page. Web. 2 June 2010.

[83] "Comparing food expenditures by income group." *TED: The Editor's Desk*. U.S. Bureau of Labor Statistics, 25 Aug. 1999. Web. 1 June 2010.

[84] Angus Deaton and Christina Paxson. "Economies of Scale, Household Size, and the Demand for Food." *Journal of Political Economy* (1998): 897-930.

[85] Jessie X Fan, et al. "*Household food expenditure patterns: a cluster analysis*." Monthly Labor Review (2007): 38-51.

[86] "Table 8: Region of residence: Average annual expenditures and characteristics." *2007 Consumer Expenditure Survey*. U.S. Bureau of Labor Statistics, 2007. Web. 1 June 2010.

[87] "Comparing food expenditures by income group." *TED: The Editor's Desk*. U.S. Bureau of Labor Statistics, 25 Aug. 1999. Web. 1 June 2010.

primary source of fresh produce. Furthermore, 41 percent of consumers report that they obtain at least a quarter of their fresh produce from these sources.[88]

Food Type/Nutrition Breakdown

There has been an increase in both expenditure on and consumption of refined carbohydrates and fats from mid 1980s to late 1990s.[89] Although total food available has increased since the 1970s, Americans on average eat less than the *Dietary Guidelines for Americans* recommended daily amounts of fruits, vegetables, whole grains, and milk products. On the other hand, Americans tend to eat more than the recommended amount of refined grains, meat and eggs, oils and fats, sugars and sweeteners.[90] These patterns are not universal, however; for example, Asian-American households tend to spend more on fresh fruits, fresh vegetables, seafood, and rice, and less on dairy products and oils.[91]

Food Demand Projections

The USDA's Economic Research Service has projected that by 2020, expenditures on fruits and vegetables will increase by approximately 27.5 and 26.5 percent, respectively, based on 2000 figures.[92] This is the largest growth among food sectors examined, including cereals, meats, and dairy.[93] The growth in expenditures on food away from home are expected to outpace those on food at home, 27.5 and 24.3 percent, respectively.[94] This report also projects an increasing demand among consumers for quality over quantity among consumers, based on an assumed growth in real income.

Lane County Demand for Food

In 2009, Lane County spent an estimated $1.17 billion on food ($808 million spent on food at home and $363 million spent on food away from home).[95,96] Figure 4-3

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[88] Yuko Onozaka, et al. "Local Food Consumers: How Motivations and Perceptions Translate to Buying Behavior." *Choices: The Magazine of Food, Farm, and Resource Issues* 25(1) (2010): n. pag. Web. 1 June 2010.

[89] Jessie X Fan, et al. "Household food expenditure patterns: a cluster analysis." *Monthly Labor Review* (2007): 38-51.

[90] Hodan Farah Wells and Jean C. Buzby. "Dietary Assessment of Major Trends in U.S. Food Consumption, 1970-2005." *Economic Research Service*. U.S. Department of Agriculture, Mar. 2008. Web. 1 June 2010.

[91] Shiao-Lin Shirley Tsai and Lucilla Tan. "Food-at-home expenditures of Asian households." *Monthly Labor Review* (June 2006): 15-26. Web. 1 June 2010.

[92] Noel Blisard, et al. "Food Expenditure by U.S. Households: Looking Ahead to 2020." *Economic Research Service*. U.S. Department of Agriculture, Feb. 2003. Web. 1 June 2010.

[93] Ibid.

[94] Ibid.

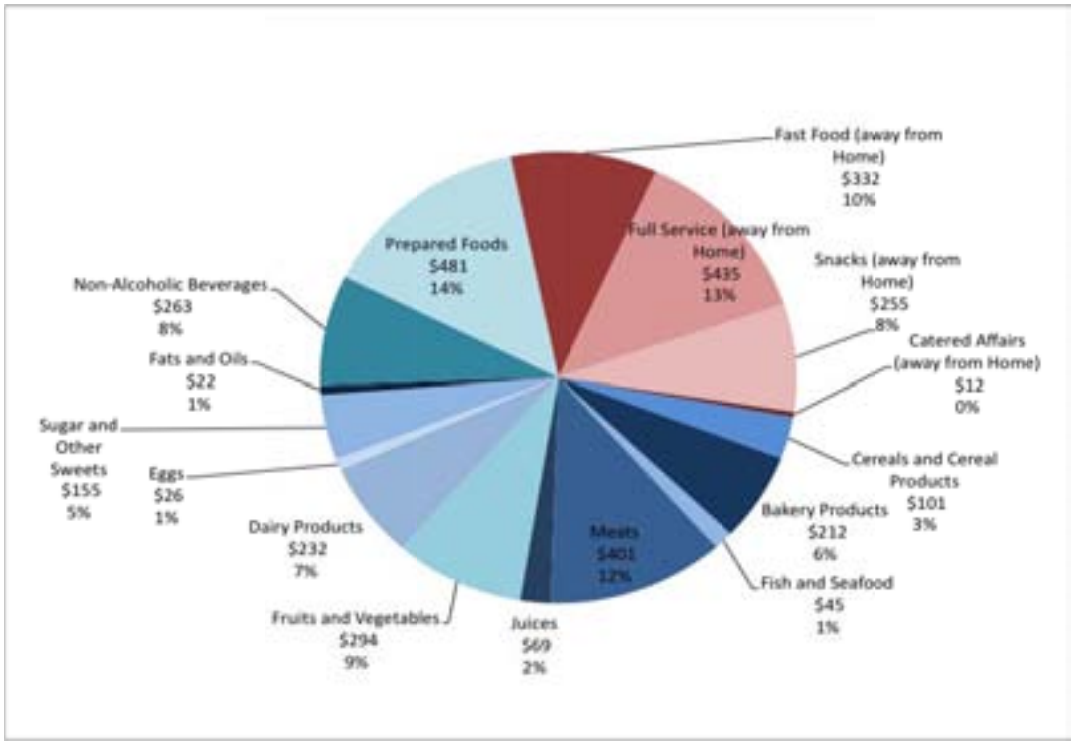
[95] "CBP – Food at Home – Lane County, OR." *Nielsen Solution Center.* The Nielsen Company, 2010. PDF Document.

[96] "CBP – Food Away from Home – Lane County, OR." *Nielsen Solution Center.* The Nielsen Company, 2010. PDF Document.

shows the category breakdown of per capita food spending in Lane County. Fruits and vegetables accounted for about nine percent of food spending at home. In 2009 this amounted to $294 per capita, or over $103 million annually for Lane County. This number is higher in reality, since consumers also eat fruits and vegetables away from home, at restaurants and other institutions.

Using the ERS projection that expenditures on fruits and vegetables will increase by approximately 27.5 and 26.5 percent, respectively, between 2000 and 2020, an estimate can be made of the increase in fruit and vegetable spending in Lane County by 2020 using 2009 data. Assuming about half of this projected increase has occurred by 2009, fruit and vegetable spending in Lane County will increase to approximately $328 per capita by 2020, or about $115 million annually for Lane County. Some of the $12 million increase in fruit and vegetable spending could be spent with Lane County producers. (For calculations, see Appendix D, Table D-2).

Figure 4-3. 2009 Per Capita Food Spending for All Food by Category, Lane County



Sources: “CBP – Food at Home – Lane County, OR.” *Nielsen Solution Center.* The Nielsen Company, 2010. PDF Document. “CBP – Food Away from Home – Lane County, OR.” *Nielsen Solution Center.* The Nielsen Company, 2010. PDF Document. ; “Lane County QuickFacts from the U.S. Census Bureau.” *State and County QuickFacts.* U.S. Census Bureau, 22 Apr. 2010. Web. 7 June 2010.

National Demand for Local Food

A number of studies show a significant demand for locally produced food nationwide. A study conducted by the American Farmland Trust in 2001 showed that 52 percent of Americans want their food to be produced within their own state. The same study noted that 54 percent of the respondents reported making a purchase at a farmers market within the past year; 40 percent reported

purchases from a farm stand in the same period. Another national study of food shoppers found that 52 percent shop at a farmers markets, belong to a CSA, or buy directly from a farmer on a regular basis.[97] This same study found that demographic and economic variables among the households had no impact on their reported purchases of local foods.[98] Rather, attitudinal factors such as an enjoyment of cooking were more closely correlated with local food purchases.[99]

Another report found that 82 percent of consumers reported purchasing local foods.[100] This statistic is somewhat tempered by the lack of a consistent definition of "local" among these consumers, however at least 70 percent define local as a 50-mile radius.[101] Compared with the number of consumers in the same survey who reported buying organic produce (roughly 50 percent), these findings demonstrate significant potential for marketing as a driver for local food purchases.

There is also some research on demand for locally produced foods in Oregon. One study of consumers in Albany and Corvallis found that 87 percent of the respondents believed that the "purchase of local foods to support local farms was very important or somewhat important" and 89 percent believed purchase of local foods was important to support the local economy.[102] Their research also found that income and demographic factors were not associated with support for local products.[103] Perhaps most interesting is their finding that 50 percent of consumers were willing to pay more for local products, compared with 35 percent who were willing to pay the same, and 16 percent who expected to pay less.[104]

A recent study conducted by the University of Minnesota drew similar conclusions. For instance, the authors of the Minnesota study conclude that the supply of local food may be a larger barrier than demand of local food. Similarly, price was not listed as a significant issue in the demand of local food. The people surveyed were more concerned about freshness than they were about price.[105]

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[97] Lydia Zepeda and Jinghan Li. "Who Buys Local Food?." Journal of food Distribution Research. 37.3 (2006): Print.

[98] Ibid.

[99] Ibid.

[100] Yuko Onozaka, et al. "Local Food Consumers: How Motivations and Perceptions Translate to Buying Behavior." *Choices: The Magazine of Food, Farm, and Resource Issues* 25(1) (2010): n. page. Web. 1 June 2010.

[101] Ibid.

[102] Garry Stevenson and Larry Lev. "Common Support for Local Agriculture in Two Contrasting Oregon Communities." *Renewable Agriculture and Food Systems*. 19.4 (2004): 210-17. Print.

[103] Ibid.

[104] Ibid.

[105] King, Robert. "Consumer Attitudes about Local Foods." *Department of Applied Economics*. University of Minnesota, 2 Apr. 2007. Web. 1 June 2010.

These findings indicate that there is a broad market for local foods. However, these studies did not examine the demographics of the population who buy local food. The acceptance of SNAP at farmers markets, including those in Lane County, allows increased low-income access to farmers markets, and thus local foods. Some studies show that access to farmers markets using a WIC voucher, increased fruit and vegetable consumption by these groups.[106] Still, these studies do not conclusively examine whether SNAP participants or other low-income populations exhibit a preference for local foods.

Local Food in Lane County Grocery Stores

A study conducted of produce managers from 15 major conventional grocery stores (Safeway, Fred Meyer, and Albertsons stores) found that there is high consumer demand for local produce, but that the amount of local produce actually sold has been decreasing. This seeming paradox can be explained in part by the barriers to selling local produce in large grocery stores:[107]

- **Company supply requirements**—many chains require producers to entirely supply a store, town, or even region with a given product, a tall order for smaller producers;
- **Cost**—although the produce managers interviewed tended to rank product cost as low on the list of barriers, company policies are often so stringent that bringing on a new vendor can cost thousands of dollars in staff time;
- **Consumer expectations, quality control, and growing season**—because of climate, weather, farm scale, and other factors, locally grown produce lacks the consistency of quality, uniformity of appearance, and stability of price that produce managers say their customers expect; and
- **Slow speed of corporate change**—it takes time for policies to change in large organizations, and for-profit companies are no exception. It may take years in between when a higher demand for local food is identified and when more local products actually hit the shelves.

On the other hand, demand for local produce does remain high. Produce managers reported that sales increase when local items arrive on the shelves, and customers frequently request more local products. The most commonly requested items in the Eugene-Springfield area are strawberries, tomatoes, corn, and melons.

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[106] Herman, Dena R., Harrison, Gail G., and Jenks, Eloise. “Choices Made by Low-Income Women Provided with an Economic Supplement for Fresh Fruit and Vegetable Purchase.” Journal of the American Dietetic Association. 106 (2006):740-744. Print.

[107] Jeremy Sande, "Breaking the Chain: Local Produce Availability at Conventional Chain Supermarkets in Eugene and Springfield Oregon." Terminal Project. University of Oregon, 2010.

This study also examined the percentage of local produce items that are being sold relative to total produce sales. Both Fred Meyer and Albertsons stores indicated that during the summer months, 50-70 percent of produce items sold can be classified as "local" by their individual company standards. During the winter months, this figure dropped to 10-20 percent and consisted primarily of squash, apples, and pears. Safeway locations reported that local items account for about 10-20 percent of all produce sold in the summer months, and that no local items are sold during the winter months. This means that local produce accounts for roughly 3 percent of total sales at Albertsons and Fred Meyer stores.

According to two anonymous sources for this study, a produce department at a conventional chain supermarket in the Eugene-Springfield area earns between $30,000 and $50,000 in gross sales each week. Conservative estimates indicate that each Albertsons and Fred Meyer location sells around $200,000 worth of local produce during the peak-growing season.

These sales figures mean that a chain supermarket in Eugene or Springfield makes between $1.6M and $2.6M in produce sales each year. Because there are 15 chain supermarkets in this area that means that chain supermarkets sell between $24M and $39M. Because local produce accounts for roughly 3 percent of this figure, the study estimated that $9.45 million worth of local produce retails at all chain supermarkets in Eugene and Springfield. This figure is significantly higher than calculations based on national data.

Additionally, these managers see their customers as relatively insensitive to price—quality is what they look for first, and local products are generally perceived as being of higher quality. Price sensitive customers may tend to purchase food at discount retailers. There is inconclusive evidence concerning the amount of local foods purchased by these retailers, although anecdotal evidence suggests that they do purchase some local products.[108]

Institutional Demand for Local Food in Lane County

Institutions face a number of obstacles when purchasing local food in Lane County. Numerous interviews with institutional buyers in schools, hospitals and correctional facilities revealed that price, quality and quantity of local food, contractual restrictions and ease of purchasing were all influential in the amount of local food in local institutions. Despite these obstacles, institutions make up a large and important market for local food.

School Districts

BUDGET

School districts in Lane County spend a sizeable amount of money on food annually. CPW estimated the size of the potential market for local food using the following assumptions:

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[108] Jeremy Sande, "Breaking the Chain: Local Produce Availability at Conventional Chain Supermarkets in Eugene and Springfield Oregon." Terminal Project. University of Oregon, 2010.

- The USDA estimates that lunch costs $2.68 per student[109]
- The USDA reimburses schools for up to 19.5 cents per meal for entitlement foods under the USDA Commodity Foods Program[110]
- Children attend school on average 180 days per year in the U.S.[111]
- There are 50,744 children enrolled in school (K-12) in Lane County[112]

Therefore, school districts in Lane County could potentially spend $22.7 million on local food annually.[113]

Although there is tremendous potential to increase the amount of food schools buy locally, the reality is that school districts are under pressure to stretch their food budgets and local food is often more expensive. Given this, price is a critical factor when making purchasing decisions.[114] School nutrition directors typically have two ways of purchasing food: through the USDA Commodity Program and at their own discretion.

The USDA operates the Schools/Child Nutrition Commodity Program that offers various food products to schools. The USDA purchases commodity foods from farmers and then stores these food products in distribution centers all over the country. The USDA also provides money to each state Department of Education that then distributes allotments to the schools. This allotment is based on the number of students attending the school and the percent that qualifies for free and reduced lunches. The school districts can then spend down the allotments provided to receive food from the commodities program.[115]

Schools can also purchase food from vendors other than the USDA Commodity Food Program. This portion of their purchases is often referred to as the discretionary budget, as it can be spent based on a particular school district's requirements. This discretionary budget is what is typically used when purchasing local food. School districts are often hesitant to spend discretionary funds on items that can be obtained via the commodities program.[116] It is important to note that private or charter schools may have more flexibility in terms of food

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[109] Food and Nutrition Service, USDA. "National School Lunch Program." Web. 10 August 2010. http://www.fns.usda.gov/cnd/lunch/AboutLunch/NSLPFactSheet.pdf

[110] Food and Nutrition Service. "Schools/Nutrition Commodity Programs Food Distribution Fact Sheet." USDA. Web.

[111] National Center for Education Statistics, U.S. Department of Education. Web.

[112] U.S. Census Bureau, 2006-2008 American Community Survey.

[113] $2.485 per meal * 180 days* 50,744 students. This calculation assumes that 100 percent of students eat school lunch.

[114] Fennimore, Michelle. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1 July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

[115] Megan Kemple. Personal interview. 17 Mar. 2010.

[116] Ibid.

budgets and may therefore have more opportunity to expand local food purchasing.[117]

Megan Kemple, the Farm-to-School Coordinator for Willamette Farm and Food Coalition, and Jennie Henchion, the Nutrition Services Director for the Bethel School District, were both interviewed for the purposes of this study.

With the help of the Willamette Food and Farm Coalition's Farm to School coordinator, Eugene area K-12 schools have prioritized local food purchasing at an increasing rate each year. Bethel and Eugene 4-J School districts, in particular, have received national attention for their innovative strategies and tireless work toward buying as much local food as possible. Jennie Henchion noted that farmers often contact with her to establish a relationship, since many farmers are proud to have their food served in local schools.

CPW also obtained information related to school demand from Megan Kemple. In the 2008-2009 school year, the Bethel School District spent a total of $808,127 on food. This figure includes the USDA commodities allotments, which accounted for nearly 15 percent of the overall budget. However, approximately 22 percent of the food purchased by the Bethel School District is considered local. A large share of this (19 percent of the total budget) is spent on local milk from Lochmead Dairy. Bethel also spent a large amount ($6,022) on local apples from Detering Orchards. Bethel is also purchasing some local whole-wheat flour from Hummingbird Wholesale. All of the focus crops are in high demand at local schools. However, Henchion mentioned that salad greens would have to have a mild flavor in order for schools to use them and winter squash would need to be pre-processed off site.

Nutrition Standards

School districts must comply with state and federal nutritional standards. According to the USDA, the 1995 Dietary Guidelines for Americans recommendations must be met by school districts. These guidelines recommend, "that no more than 30 percent of an individual's calorie intake come from fat and no less than 10 percent from saturated fat."[118] Additionally, school lunches must "provide one-third of the Recommended Dietary Allowances of protein, Vitamin A, Vitamin C, iron, calcium, and calories."[119] This adds a layer of complexity to the personnel responsible for food purchasing, as each meal served must meet

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[117] Fennimore, Michelle. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1 July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

[118] "National School Lunch Program." *National School Lunch Program*. U.S. Department of Agriculture, Aug. 2009. Web. 1 June 2010. <http://www.fns.usda.gov/cnd/Lunch/AboutLunch/NSLPFactSheet.pdf>.

[119] Ibid.

guidelines that specify the amount of protein, starch, fruits and vegetables served.[120]

Seasonality

Seasonality is another consideration school districts face. Schools in Oregon operate on a typical academic calendar, with summers off. The high season for food production in Oregon is during the summer months, which presents problems with school districts obtaining those foods locally.[121]

Contracts

As much as school districts want to incorporate local food into their meal programs, it is difficult to contract with multiple vendors. With limited time and budgets, it is more cost effective to contract with a single distributor. Currently, Bethel does not contract with a single distributor and works with a number of vendors to provide the needed food. However, that will be changing for the 2010-2011 school year. Eugene 4-J does contract with Sodexo and incorporates some local food, albeit not as much as Bethel.[122]

Hospitals

Budget

While there is a healthy interest in localizing the food used at hospitals, many have yet to start purchasing local or organic food. The primary reason hospitals are continuing with the status quo is price. Local and organic food is usually more expensive.[123]

Multiple Operations

Most hospitals serve food to the patients, and operate cafeterias and catering services at each facility. Cafeterias and catering services may have more flexibility in what is purchased because the cost difference can be included in the price of the food to the consumer.[124] However, there is a substantial push to localize food

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[120] Michelle Fennimore. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1 July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

[121] Ibid.

[122] Megan Kemple. Personal interview. 17 Mar. 2010.

[123] Michelle Fennimore. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1 July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

[124] Fennimore, Michelle. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1 July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

in hospitals and other medical facilities. At the forefront of this national campaign is the organization Healthcare Without Harm (HCWH).[125]

Purchasing Power

Health Care Without Harm is an organization of health care facilities that advocates sustainable and local purchasing of food and beverages at hospital food facilities.[126] This organization believes that the purchasing power of health care facilities is influential and could set a standard for other organizations when it comes to food purchasing. The impact of this organization could be seen in the entire food supply chain from production to processing to distribution.

As is the case with many schools and universities, hospitals tend to utilize contracts with food service providers to supply their cafeterias with food. McKenzie-Willamette purchases 99 percent of their produce through Emerald Produce. Peace Health (Sacred Heart), who contracts through Premier with U.S. Foods in Washington, is obligated to purchase 80 to 85 percent of their food from that company. The remainder of the food comes from contracts with other vendors, some of which can be considered local (such as Springfield Creamery and Lockmead Dairy). Contracts with these local vendors total $46,000 per month, although the purchases made through local vendors are not all locally produced products.

Community Colleges and Universities

Throughout the country, community colleges and universities are reflecting higher demand for local food and developing relationships with local producers, processors and distributors. These relationships have gained more momentum at private universities, which often have larger food budgets. Much of the drive behind increased purchasing of local foods at the university level comes from students. National student organizations such as Real Food Challenge offer trainings, information and resources for students interested in helping to integrate local food into their campuses. Real Food Challenge has over 330 member colleges and universities.[127]

Locally, both the University of Oregon and Lane Community College are taking great strides to integrate local food whenever possible. In 2009, the University of Oregon began a concerted effort to increase its purchasing of local foods through the Oregon Solutions Lane County Food Distribution Project. Lane County Community College also emphasizes local food through the culinary school's student-run cafeterias and catering programs, as well as in the culinary curriculum. Students enrolled in the program work in the school garden, use produce harvested from the garden in their meals, and hold an annual 100-mile

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[125] Cosgrave, Toby and Preston Maring. "Heath Care Without Harm Healthy Food Systems." *Heath Care Without Harm*. Health Care Without Harm, 6 Apr. 2006. Web. 7 May 2010. <www.noharm.org/lib/downloads/food/Food_and_Food_Purchasing.pdf>.

[126] Ibid.

[127] Real Food Challenge, All Participating Schools, 27 May 2010 <http://db.realfoodchallenge.org/schools/>.

meal using only products that they have been sourced within 100-miles of Eugene. The program hopes that its educational emphasis on local food will help to shape the future of commercial and institutional food policy.[128]

Awareness

Demand for local and organic food at universities is extensive and growing annually.[129] Generally, the university population is more aware of their food's origin and its environmental and social impacts.[130]

Contracts

While most university cafeterias and restaurants purchase their food from contract management companies such as Aramark, Sodexo, or hire food service companies such as Bon Appétit, these companies do have the capacity and flexibility to adjust to the needs and desires of the clients.[131]

Price Sensitivity

Universities tend to be less price sensitive than public school districts. Often, the price of more expensive food can be passed along to the customers (such as through à la carte pricing)[132] or subsidized in other ways.[133]

University of Oregon

Tom Driscoll, Director of Food Services at the University of Oregon (UO) was interviewed for this study. The UO serves approximately 9,000 meals each day in its various dining halls and through campus catering.[134] **The University's annual food purchasing budget is almost $6.5 million**, including the University's catering service. Tom Driscoll estimates that about 20 percent of this budget goes to local foods, with variation depending on time of year and the definition of "local" that is used.[135] The UO does use local food in their dining hall and catering operations when it's cost competitive and relatively convenient. Tom Driscoll indicated that demand for local food is on the rise at the University. Students believe in the

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[128] Lane Community College, Culinary Arts and Hospitality Management, <http://lanecc.edu/culinary/cuisine.htm>.

[129] Michelle Fennimore. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1 July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

[130] Ibid.

[131] Ibid.

[132] Tom Driscoll. Personal interview. 5 May 2010.

[133] Michelle Fennimore. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1 July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

[134] Tom Driscoll. Personal interview. 5 May 2010.

[135] Ibid.

health and social benefits of local food, which has resulted in momentum behind the movement on campus. However, UO has found that barriers to local food purchasing include price, limited supply and the inconvenience of multiple orders and deliveries.[136]

The UO recently participated in the Lane County Food Distribution project conducted by the Oregon Solutions Task Force. Through this project, the UO ordered local produce whenever possible, using Eugene Local Foods as its distributor. This project required the tracking of local food purchases. Due to that requirement, quantitative data on price and quantity was recorded by the UO (see Figure 4-4 below). Data that compared local versus non-local costs showed that local food was overall more expensive. There were only a few exceptions to that rule. Both squash and leeks proved to be less expensive to purchase locally. UO spent just over $12,000 on local food for the Summer/Fall 2009 time period. The UO compared the price paid of the local food with that of what a "typical" purchase price would have been. Purchasing the same food from a conventional vendor would have only cost the UO just over $6,300. This vast price discrepancy, combined with the limited supply and occasional dirtiness of some food items sourced locally, were deterrents to continuing UO's wholesale purchasing of local foods.[137]

Following this study, the UO has concluded that local foods are most appropriate in its a la carte meals, rather than traditional cafeteria meals. In an a la carte setting, it can market the food as local and price the meals accordingly to compensate for higher cost and labor. In a traditional cafeteria-style dining hall, it has less price flexibility and therefore cannot often incorporate local foods.[138] Certain products, such as beans, are so affordable that Tom Driscoll thinks the UO could probably absorb the price increase of local beans without having to increase the price of its final product.[139]

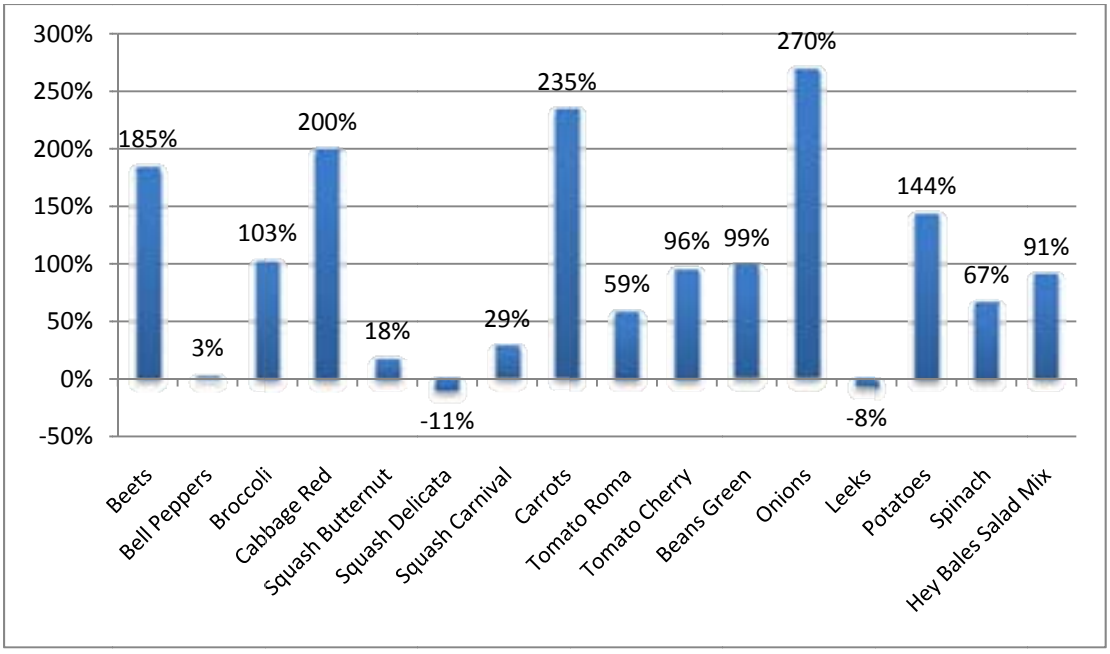
[136] Tom Driscoll. Personal interview. 5 May 2010.

[137] Ibid.

[138] Ibid.

[139] Ibid.

Figure 4-4: Costs of Local Food Relative to Non-Local Food, University of Oregon, Summer-Fall 2009



Source: Tom Driscoll, University of Oregon, unpublished data, 2009.

Correctional Facilities

In addition to the correctional facilities that currently exist in Lane County, additional facilities may be opening over the next five years. As a result, understanding the constraints and opportunities of the demand from these types of institutions is important.

BUDGET

Like any public entity, food budgets for correctional facilities tend to be limited.[140] However, an interview with Lane County Jail revealed that they have complete control over where they spend their food budgets.[141] Requirements for buying local include uniformity, price competitiveness and quality.

CONTRACTS

To maintain safety and security, correctional facility purchasing managers like to minimize the number of outside vendors entering the facility. Therefore, correctional facilities tend to purchase food from a minimum number of vendors.[142]

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[140] Fennimore, Michelle. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1 July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

[141] Elizabeth Burrows, Lane County Jail. Personal Interview. 14 July 2010.

[142] Michelle Fennimore. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1

Purchasing of food for correctional facilities is generally done through broad-line distributors such as Sysco or Food Services of America. These distributors provide a "one-stop shopping" experience that correctional facilities prefer.[143] Lane County Jail does not have a binding contract with any one distributor. Elizabeth Burrows of Lane County listed more than 10 vendors that they receive food from on a weekly basis.

Focus Crop Consumption in Lane County

To understand the capacity for local food growth in Lane County, the following section outlines the current national per capita consumption data for each focus crop. Table 4-1 summarizes the per capita consumption in the U.S. for each of the focus crops in 2007. Consumption statistics are calculated by the ERS and are an approximation of the total amounts purchased by consumers. Per capita availability includes both domestic production and imports of these food crops. Americans consume almost 140 lbs. of wheat per person in 2007, for example, but as little as 5 lbs. of pumpkin or dry beans.

Table 4-1. Per Capita Consumption of Six Focus Crops (2007)

Crop	Per Capita Consumption (lbs.)
Wheat	138.25
Tomatoes	88.5
Apples	49.85
Salad (head lettuce, leaf lettuce, and fresh spinach)	32.7
Pumpkin	5.28
Dry Beans (excluding lima)	4.8

Source: "Food Availability (Per Capita) Data System – 2007 data." Economic Research Service. U.S. Department of Agriculture, 16 Feb. 2010. Web. 1 June 2010.

Table 4-2 below estimates the current locally produced supply of each focus crop and compares it with the projected demand for consumption in Lane County. Not surprisingly, the results suggest that considerable sales leakage exists for all of the crops. Moreover, based on these estimates, it is evident that there is a strong market potential for each of the focus crops is evident. If 100 percent of the demand for five of the six focus crops were produced within Lane County, there is a potential to recapture gross revenue of approximately $33.5 million annually.

July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

[143] Michelle Fennimore. "Clackamas County – Demand Side Study of Business and Institutional Buyers for Locally Grown Food." *Competitive Insights*. Conservation District, 1 July 2008. Web. 7 May 2010. <http://www.conservationdistrict.org/packets/demandside.pdf>.

Table 4-2. Lane County Potential Focus Crop Revenue (2007)

Focus Crop	Supply (lb)	Demand (lb)	Variance (lb)	2007 Sales	Sales Per lb	Potential Revenue for Lane County
Wheat	9,180,000	48,015,989	-38,835,989	$918,000	$0.10	$3,883,599
Tomatoes	5,850,000	30,944,410	-25,094,410	$4,972,000	$0.85	$21,328,104
Salad Greens	313,600	5,945,499	-5,631,899	unknown	unknown	unknown
Beans	unknown	unknown	unknown	unknown	unknown	unknown
Apples	5,304,000	17,349,731	-12,045,731	$2,897,000	$0.55	$6,579,277
Winter Squash	450,000	1,836,673	-1,386,673	$547,000	$1.22	$1,685,578
Total						**$33,476,558**

Source: "Commodity Data Sheets." *Oregon Agricultural Information Network.* Oregon State University, 2010. Web. 1 June, 2010. (supply of wheat, tomatoes and apples, sales per pound); "2007 Census of Agriculture: Oregon State and County Data." *2007 Census of Agriculture.* U.S. Department of Agriculture, Dec. 2009. Web. 1 June 2010. (supply of winter squash and pumpkins and salad greens, sales per pound); "Food Availability (Per Capita) Data System – 2007 data." Economic Research Service. U.S. Department of Agriculture, 16 Feb. 2010. Web. 1 June 2010. (demand for all crops) [144,145]

Demand Assessment for Focus Crops

Estimating the elasticity of individual food products is complex, because most food products are substitutable for one another to some degree. Table 4-3 presents the national price elasticity of demand for five of CPW's six focus crops (data for winter squash and pumpkins is unavailable).

Demand for all of these food crops is inelastic—that is, a change in price will yield a proportionally smaller change in demand. The most inelastic are dry beans, flour, and lettuce. This suggests that these crops are seen as "staples" that people purchase regularly regardless of price—or that they represent a small enough portion of household food budgets that price fluctuations are unimportant.

The most price-elastic good on the list of focus crops is bagged salad, for which a 10 percent increase in cost would yield at least a 5 percent decrease in demand. This suggests that pre-bagged salads are a "luxury" item that can be dispensed with; it is not essential when budgets are tight.

Interestingly, wheat flour shows a slightly *positive* elasticity of demand, meaning that as the price of flour increases, so does the consumption of flour (though to a much smaller degree). A possible explanation for this is that when the price of

[144] Salad Greens Estimate of pounds per acre is derived from: LeStrange, Michelle, et al. "Spinach Production in California." *Vegetable Research and Information Center*. UC Davis, 1996. Web. 1 June 2010.

[145] Winter squash estimate of pounds per acre (150 bushels/acre estimate) is derived from: Nagel, David. "Commercial Production of Acorn Squash in Mississippi." *Mississippi University Extension Service*. Mississippi State University, 13 May 2010. Web. 1 June 2010.

flour goes up, so does the price of all other wheat products, and consumers are more likely to do their own baking in an effort to cut costs.

It is important to keep in mind that the study of price elasticity is far from an exact science. Elasticity is calculated at a single point on a demand curve. That is, although it may be accurate that the own-price elasticity of demand for apples is -0.36 at the current price level, this factor will likely change as price and demand change. Furthermore, most of the specific numbers presented in Table 4-3 are calculated by averaging the values of multiple studies. Unfortunately, in some cases these values vary widely—for example, findings for the price elasticity of demand for flour vary from -1.01 to 1.37.[146]

Table 4-3. National Price Elasticity of Demand for Five Focus Crops

Crop	Own-Price Elasticity of Demand
All Grains	-0.25
Flour	0.14
Tomatoes	-0.33
Apples	-0.36
Lettuce	-0.08
Bagged Salad	-0.56
Dry Beans	-0.12

Source: "Commodity and Food Elasticities: Demand Elasticities from Literature Results." Economic Research Service. U.S. Department of Agriculture, 16 Sept. 2009. Web. 1 June 2010.

The cross-price elasticity of organic versus conventional products is also of interest because it may be analogous to the relationship between local and non-local products. Two studies—one of milk and one of frozen vegetables—suggest that in general the general demand for organic products is fairly price elastic. Furthermore, the studies find that organic products and conventional products are substitutable, but asymmetrically. That is, a modest increase in the price of a conventional product sets off a large increase in the consumption of its organic counterpart, but the price of organic products has very little effect on consumption of conventional products.[147] [148] If these basic relationships hold for local food as well, we can expect that consumption of local food products will be

[146] "Commodity and Food Elasticities: Demand Elasticities from Literature Results." *Economic Research Service*. U.S. Department of Agriculture, 16 Sept. 2009. Web. 1 June 2010.

[147] Lewrene K.Glazer and Gary D. Thompson. "Demand for Organic and Conventional Beverage Milk." *Western Agricultural Economics Association Annual Meeting.* Vancouver, BC. 29 June 2000. Web. 1 June 2010.

[148] Ibid.

most responsive to decreases in the price of local food and increases in the price of non-local food.

Institutional Demand for Focus Crops in Lane County

TOMATOES

Consumer demand is high for fresh market and processed tomatoes. In the U.S., 20.3 pounds of fresh tomatoes are consumed per capita per year, while 68.6 pounds of processed tomatoes are consumed per capita per year.[149] Lane County consumes roughly 31 million pounds of tomatoes annually. Seven million are consumed as fresh tomatoes. Steep competition from California and Mexico makes growing tomatoes for processing at a competitive price nearly impossible. California farmers grow 95 percent of the tomatoes used for processing in the United States, and the average price per pound is only 3.5 cents.[150] However, because of the fragility of fresh tomatoes, Lane County is well positioned to compete against imports as growers here can deliver a fresher, higher quality product. As a result, tomatoes grown in the southern Willamette Valley are primarily sold at the fresh market. Darrin Soderberg of Food Services of America noted that local tomatoes for fresh market are cost competitive in the summer, but supply is limited.[151]

Data from the University of Oregon (UO) indicates a high demand for fresh tomatoes. In 2009, the UO spent over $48,000 on fresh tomatoes. However, a cost comparison between local roma and cherry tomatoes and non-local tomatoes demonstrated that there was a 59 and 96 percent price increase (respectively) in locally grown tomatoes. In conclusion, although there is a high demand for fresh and processed tomatoes, the local market may not be cost competitive with the non-local market.[152]

SALAD GREENS

FoodHub and the 2006 Good Company survey demonstrate that salad greens are in high demand locally year round. However, according to Darrin Soderberg of Food Services of America, the northwest does not have the agricultural resources to meet this sustained demand. Tom Lively (Organically Grown Company) and Ross Penhallegon (Oregon State Extension) both emphasized that salad greens grow well in this climate and can be grown year-round with only minimal protection.

The University of Oregon (UO) has a successful relationship with Hey Bayles, a farm that reliably produces large quantities of high quality salad greens. During the summer and fall of 2009, the UO spent $6,850 on Hey Bayles salad mix and an

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[149] "Food Availability (Per Capita) Data System – 2007 data." Economic Research Service. U.S. Department of Agriculture, 16 Feb. 2010. Web. 1 June 2010.

[150] Deborah K. Rich. "California – tomato capital of the nation." *San Francisco Chronicle* 23 Aug. 2008 special ed. Web. 1 June 2010.

[151] Darrin Soderberg, Food Services of America. Personal interview. (29 March 2010).

[152] Tom Driscoll. "Local vs. Conventional Purchases." Unpublished data, 2009.

additional $145.50 on local spinach. A cost comparison between Hey Bayles salad mix and a non-local equivalent demonstrates that UO spent 91 percent more on the local salad greens than a non-local equivalent and 67 percent more purchasing local spinach than a non-local equivalent.[153]

While pricing may not be competitive for local salad greens, they are often fresher. Since salad greens have a very short shelf life and require constant refrigeration, greens shipped from far away may be susceptible to higher rates of wilting, damage or contamination. There may be a competitive opportunity for local salad greens if consumers feel that they can trust local producers more than non-local producers.[154]

Wheat

Wheat is in high demand across the United States. Per capita consumption of white and whole wheat is approximately 125 pounds per year.[155] This is in addition to 19 pounds of flours, and 12 pounds of durum (pasta) wheat.

Rick Turanski from GloryBee Food stated that there is an unmet demand for local hard red wheat.[156] GloryBee and the University of Oregon currently purchase their hard red wheat from Shepherd's Grain, an alliance of family farms using sustainable agricultural practices in eastern Washington.

Hummingbird Wholesale recently performed a survey of local bakeries, restaurants, retail stores, and institutions in order to gauge demand for grain products in the area. The results of this survey were reported in total pounds required. The findings in Figure 4-5 below help give a snapshot of demand for wheat and wheat products in the Eugene and the greater region.

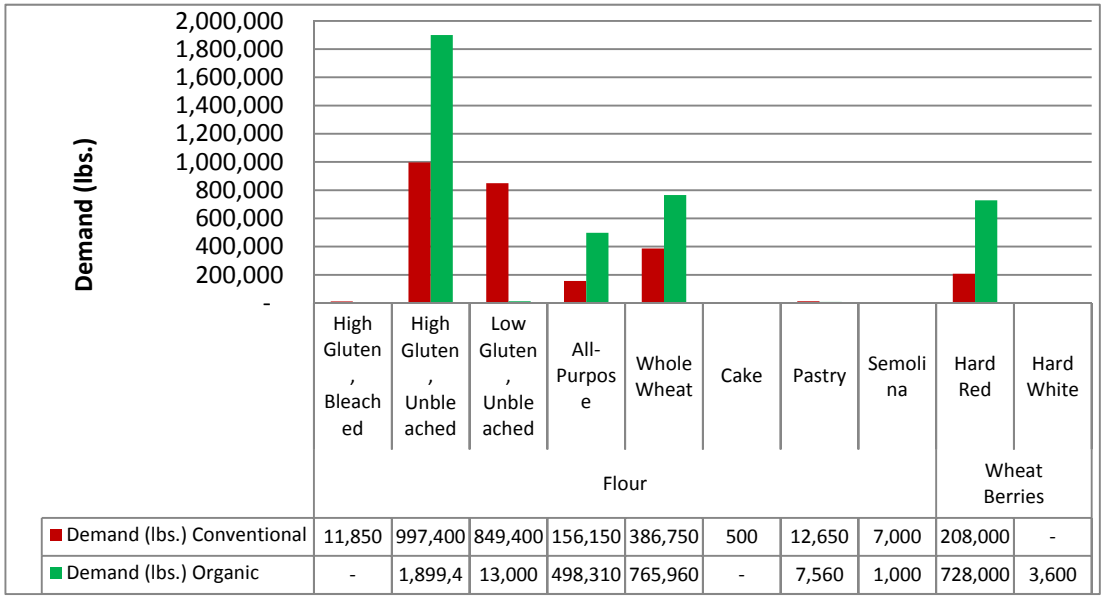
[153] Ibid.

[154] Lively, Tom Lively, Organically Grown Company. Personal interview. 6 Apr. 2010.

[155] "Food Availability (Per Capita) Data System – 2007 data." Economic Research Service. U.S. Department of Agriculture, 16 Feb. 2010. Web. 1 June 2010.

[156] Rick Turnanski, GloryBee Food. Personal interview. (7 April 2010).

Figure 4-5: Demand for Wheat – Hummingbird Survey Results, 2009



	High Gluten, Bleached	High Gluten, Unbleached	Low Gluten, Unbleached	All-Purpose	Whole Wheat	Cake	Pastry	Semolina	Hard Red	Hard White
Demand (lbs.) Conventional	11,850	997,400	849,400	156,150	386,750	500	12,650	7,000	208,000	-
Demand (lbs.) Organic	-	1,899,4	13,000	498,310	765,960	-	7,560	1,000	728,000	3,600

Source: Hummingbird Wholesale, Eugene, Oregon, unpublished data.

Among the wheat products included in the survey, the highest demand (1.9 million pounds) was for organic unbleached high-gluten flour. The majority of this demand came from Dave's Killer Bread in Portland. The next highest demand was for conventional unbleached high-gluten flour (997,000 pounds), with the bulk of the demand coming from the Market of Choice retail chain. Bethel School District is the only institution demanding high-gluten bleached flour demand (11,850 pounds). These figures indicate that there is a significant market demand for hard wheat. Newer varieties of hard wheat that can grow in the valley have had some success. However, the scalability of this success, and the quantity of appropriate soil conditions are unknown.

The only high-gluten bleached flour demand (11,850 pounds) comes from the Bethel School District, which prefers a conventional product for its current recipes.

Low-gluten flours produced by the soft winter wheat grown in the valley are also in demand, though at a lower level. Demand for conventional low-gluten unbleached flour is on par with the demand for the high-gluten product (849,000 pounds), with the majority of the demand again coming from Market of Choice. Cornucopia is the only restaurant with significant demand for this product, although it is only a fraction of the demand of Market of Choice.

Demand for organic, unbleached low-gluten flours is almost non-existent (13,000 pounds), with only one restaurant, Off the Waffle, reporting demand for this product.

Demand for whole wheat flours is twice as high for the organic product (766,000 pounds) than for the conventional (387,000 pounds). Organic whole wheat flour demand is on par with demand for conventional unbleached product, with most of the demand coming from Dave's Killer Bread. Dave's is also driving demand for organic hard red wheat berries, which they require in amounts (728,000 pounds)

similar to whole wheat flour. They also require 208,000 pounds of conventional red wheat berries.

There is less demand for all-purpose flours, with organic (498,000 pounds) being in higher demand than conventional (156,000 pounds). Hideaway Bakery accounts for the majority of the organic demand.

To meet this reported demand, the Willamette Valley will need to produce more hard wheats. A large portion of this product will need to be organic, which will add a level of difficulty. Lower gluten (soft) wheats are also in demand, although the majority of this demand is for the conventional product.

Winter Squash and Pumpkins

Annual per capita consumption for winter squash and pumpkins is 4.2 pounds and 5.3 pounds respectively.[157] Local squash has high potential to be cost competitive. Darrin Soderberg and Tom Lively note that local growers want to grow squash because it will sell, it works well in rotational agriculture, and it suppresses weeds. Local infrastructure already exists for processing. Truitt Brothers and Stahlbush Island Farms both process squash and pumpkins at a large scale. Stahlbush produces squash puree, and Truitt Brothers acts as a co-pack facility for them. Additionally, Stahlbush also sells pureed squash and pumpkins to Gerber and Beechnut for baby food and to soup companies.

The University of Oregon found local squash to be fairly price competitive to non-local squash. In the summer of 2009, UO purchased Butternut, Delicata and Carnival squash from Eugene Local Foods. Local Butternut was found to be 18 percent more expensive than its conventional counterpart; Delicata was 11 percent cheaper; Carnival was 29 percent more expensive.[158]

Beans

Per capita dry bean consumption in the U.S. is just under five pounds per year. The price of dry beans has fallen in the last ten years at about 0.8 percent per year from 1995-2006.[159] At the same time, U.S. acreage in bean production has been on the rise. Demand for beans is significantly higher in Western states than in other regions of the country.[160]

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[157] "Food Availability (Per Capita) Data System – 2007 data." Economic Research Service. U.S. Department of Agriculture, 16 Feb. 2010. Web. 1 June 2010.

[158] Tom Driscoll. "Category Select 2009 Purchases." Unpublished data, 2009.

[159] Fred Kuchler and Hayden Stewart. "Price Trends Are Similar for Fruits, Vegetables, and Snack Foods." *Economic Research Report Number 55.* U.S. Department of Agriculture - Economic Research Service, Mar. 2008. Web. 1 June 2010.

[160] "The U.S. Dry Bean Market in 2001/02." *Economic Research Service.* U.S. Department of Agriculture, 22 Apr. 2010. Web. 1 June 2010.

The vast majority (86 percent) of dry beans are purchased for home use. Restaurants and institutions make up the remainder of the demand. [161] Locally, the University of Oregon spends almost $14,000 per year on dry beans.[162]

The demand for local beans is increasing in Lane County. Local distributors such as Glory Bee and Hummingbird Wholesale are already selling local beans to restaurants and other institutions. In part due to the work done by the Southern Willamette Valley Bean and Grain Project on testing varieties and growing techniques, the volume and type of beans being grown locally is increasing. Black beans, pinto beans, garbanzos, kidney beans and navy beans have all proven to grow well in the Valley. Harry MacCormack from the Project stated that the basic barriers to growing more beans in the Valley are farmer education and the need for back-up irrigation systems.[163]

According to Heather McPherson, Truitt Brothers currently purchases dry beans from a facility in central Washington and then cans them at their facility in Salem, Oregon. Truitt Brothers has found that canning these dried beans during the off-season months allows them to run an efficient cannery throughout the year.[164]

The University of Oregon currently purchases black beans through Hummingbird. According to Tom Driscoll, they had committed to buying a local crop up front last year, but there was a crop failure. Driscoll also noted that local beans might be an attractive product for institutional cafeterias; they are inexpensive and go a long way, so there is some room for price increase without significantly impacting the overall price of the meal.[165]

APPLES

Based on national averages, Lane County consumes roughly 17 million pounds of apples annually, or 49.85 per capita.[166] Although 5.7 million pounds are consumed fresh, more than 9.4 million are consumed as juice products.[167] This shows a significant opportunity for local apples to be stored for longer periods as shelf stable juices.

Institutions interviewed by CPW all identified a strong demand for apples. Some local institutions are purchasing apples locally. Genesis Juice purchases their organic apples from Organically Grown Company or directly from King Estate Orchards. While tracking purchases for the Oregon Solutions project, the UO

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[161] Ibid.

[162] Tom Driscoll. "Category Select 2009 Purchases." Unpublished data, 2009.

[163] Harry McCormack, Southern Willamette Valley Bean and Grain Project. Personal interview. 2 Apr. 2010.

[164] Heather McPherson, Truitt Brothers. Personal interview. 1 Apr. 2010.

[165] Tom Driscoll, University of Oregon. Personal interview. 5 May 2010.

[166] "Food Availability (Per Capita) Data System – 2007 data." *Economic Research Service.* U.S. Department of Agriculture, 16 Feb. 2010. Web. 1 June 2010.

[167] Ibid.

purchased 20 percent of their apples from Eugene Local Foods. Bethel School District purchases large quantities of locally grown apples from Detering Orchard. School Districts have identified the need for smaller apples for the children that they service. Similarly, correctional facilities require uniformity in the size of their apples.

Some institutions are also processing local apples. Heather McPherson from Truitt Brothers noted that they produce large pouches of pre-cut apples from Tree-Top Farm.[168]

Long-term price change in apples has been steadily decreasing. According to an ERS study, the long-term inflation adjusted price of apples has decreased from 1980 to 2006 by an average annual percentage of -1.1 percent.[169] It should be noted that this data is specific to Red Delicious apples and does not account for any other variety.

The climate for apple-growing in Lane County is not ideal. According to Tom Lively of Organically Grown Company, the apple-growing climate in the Southern Willamette Valley cannot compete with the climate of the Hood River area.[170] This could pose a problem for Lane County to produce price-competitive local apples.

[168] Heather McPherson, Truitt Brothers. Personal interview. 1 Apr. 2010.

[169] Fred Kuchler and Hayden Stewart. "Price Trends Are Similar for Fruits, Vegetables, and Snack Foods." *Economic Research Report Number 55.* U.S. Department of Agriculture - Economic Research Service, Mar. 2008. Web. 1 June 2010.

[170] Tom Lively, Organically Grown Company. Personal interview. 6 Apr. 2010.

CHAPTER 5. SUPPLY CHAIN ANALYSIS

This chapter examines the supply chain that products travel through from farm to market. Like other markets, agricultural markets are difficult to generalize. In addition, the supply chain of food crops faces particular complications such as seasonality of supply, seasonality of demand, and subsidies. It begins with an overview of our approach and then presents an analysis of the supply chain for the six focus crops.

Framework for Supply Chain Analysis Approach

The market for food products is not a single-market; rather it is composed of thousands of markets, each specific to an individual product. Moreover, each individual product has a supply chain—from the grower to the consumer. Each step in the supply chain is essential to the overall production process.

The agricultural industry in the U.S. has undergone significant consolidation in the past 50 years. This consolidation impacted the supply chain in significant ways—primarily through investments in massive processing capacity that provides significant economies of scale. This consolidation also led to the systematic decline of processing facilities in Lane County.

The supply chain analysis presented in this chapter analyzes six focus crops and looks at each step in the supply chain to identify gaps or other inefficiencies that create barriers—either in supply or price—to the local distribution and consumption of locally grown products.

Focus Crops

Because the local food market is composed of thousands of products, the scope of this project was narrowed to six focus crops. The focus crops—all grains, fruits or vegetables—are intended to illustrate different aspects of the food economy. The development or expansion of the markets of each of these crops may provide a variety of economic development opportunities, including small business development, job creation, niche market expansion, or other opportunities.

Each of the focus crops examined in this chapter has a distinct supply chain and is representative of different opportunities for economic development in the next one to five years. Some are currently grown locally in large quantities; others are relatively new and small scale. In some instances, they are symbolic of a supply chain that applies to a number of different crops. For example, apples have similar growing needs and supply chains to other tree fruits, such as pears. Institutional buyers purchase all of the focus crops.

To identify the focus crops for this study, CPW consulted historic and recent agricultural data, including the USDA National Agricultural Statistical Survey (NASS) and the Oregon Agricultural Information Network (OAIN) to understand

historical and current crop production. To understand demand, CPW used per capita consumption data from the USDA Economic Research Service[171] along with a more qualitative analysis of institutional demand listed on FoodHub[172] and within the 2006 Good Company survey of institutional buyers. Crop sales and number of acres planted in the following section are from the OAIN.[173] In its analysis, CPW evaluated the value, acres planted, nutritional diversity, and the local demand for each crop.

Additional supply chain information was obtained through extensive interviews with agricultural and marketing experts at the state level, local processors, storage facilities, distributors and other public and non-profit food-related agencies.[174] CPW developed and presented a preliminary list of focus crops to the project sponsors which was ultimately narrowed to six crops:

- Tomatoes
- Beans
- Wheat
- Apples
- Salad Greens
- Winter Squash and Pumpkins

Table 5-1 provides more detail on each focus crop and the rationale for selecting them for further analysis in this study.

While the detailed analysis in this chapter is limited to the focus crops, opportunities for developing local markets are not. In some respects the ability to successfully develop local markets will depend as on the diversity of crops produced. We make this statement because the size of individual markets is often relatively small; however, when combined, the overall market is substantial.

[171] "Food Availability (Per Capita) Data System." *USDA Economic Research Service*. Web. 4 Jun 2010. <http://www.ers.usda.gov/data/foodconsumption/>.

[172] "FoodHub." Web. 4 Jun 2010. <www.http://food-hub.org/>.

[173] "OAIN Data." *Oregon Agricultural Information Network*. Oregon State University. Web. 4 Jun 2010. <http://oain.oregonstate.edu/SelReport.asp>.

[174] A complete list and synthesis of interviews can be found in Appendix C.

Table 5-1. Rationale for Focus Crop Selection

Tomatoes	Squash and Pumpkins	Salad Greens	Beans	Wheat	Apples
Opportunities Techniques available to extend the growing season Strong potential for value-added product (sauce, paste, canned, salsa, etc.) High individual and institutional demand	**Opportunities** Strong storage potential Some value-added potential (pre-cut, frozen, canning, pies, etc.)	**Opportunities** High demand from institutional buyers Year-round growing potential with minimal protection Underused nursery greenhouses could be converted to off-season salad green production	**Opportunities** Strong potential for value-added product (canning, hummus, bean dip, etc.) High in protein Existing effort to increase production (Southern Willamette Bean and Grain Project)	**Opportunities** Complex supply chain, which increase potential for local jobs and value-added products Known demand for local flour from some grocery stores and processors Land in grass seed production is being converted to wheat	**Opportunities** Extremely strong institutional demand (especially schools) Potential for value-added (sauce, juice, baked goods, etc.) Stores well as a fresh fruit
Barriers Highly fragile and perishable when fresh Cheap processing tomatoes available from California	**Barriers** Processing required for institutional use Demand is generally seasonal	**Barriers** Highly perishable Limited value-added potential	**Barriers** Lack of local drying facilities Limited current supply of local beans	**Barriers** Perceived barriers to growing bread wheat Non-local wheat is an inexpensive and abundant commodity crop	**Barriers** Lack of storage and processing infrastructure New orchards may take five years to reach productive maturity

Supply Chain Analysis Description

Analyzing the supply chain reveals the costs at different points between farm and market. The different segments of the food supply chain are discussed in Chapter 2. Understanding these costs both locally and nationally help explain how local food can ends up being more expensive than food that is produced elsewhere and shipped to Lane County. These costs also represent possible opportunities for economic development, if the supply chain is localized. Detailed descriptions of the supply chain for each focus crop are included in Appendix D.

General Assumptions

CPW conducted the supply chain analysis using 2009 or first quarter 2010 raw data from local companies in regards to their expenses and purchasing prices. If hard data was not available, then oral or email interviews were conducted with representatives from local or regional companies. If these interviews did not procure the supply chain data required for a proper analysis, then national data or assumptions based from data of different crops with similar requirements were used to fill in the gaps.

To estimate the average buy and sell price for each crop, all data for the raw products sold from that crop group were combined and averaged. Therefore, the buy and sell prices do not represent a specific product, but a weighed average for all raw products of that crop type that the company sold. For example, for apple data, the buy sell prices does not represent an actual raw product, such as a pound of granny smith apples, but are an average of all raw apple products broken down to their per pound expense.

The supply chain expenses are based on the assumed structure that the crop starts at the farmer, is washed, sorted, packaged, stored, milled (grains only) and shipped to a distributor. CPW assumed that the distributor marks up the product for overhead, profit, and expenses and ships the raw product to the end retail purchaser. These costs only reflect fresh raw products and do not reflect any additional processing costs such as cooking, chopping, or canning. Detailed supply chain information and calculations can be found in Appendices E and F.

Tomato Supply Chain Analysis

Overview

Tomato production in Lane County has increased steadily over the last 30 years. In 1976, there were only 40 acres planted, while 145 acres were planted in 2009.[175] Historically, tomatoes have been a challenging crop for the Southern Willamette Valley due to their long hot growing season from July to October. Increase in production is due in part to tomato varieties developed by Oregon

[175] "OAIN Data." *Oregon Agricultural Information Network*. Oregon State University, n.d. Web.

State University that stood up to the cool Northwest summer nights.[176] In 2007 Lane County grew 5.8 million pounds of tomatoes, primarily for fresh consumption.[177]

Demand

Consumer demand is high for fresh market and processed tomatoes. In the U.S., 20.3 pounds of fresh tomatoes are consumed per capita per year; 68.6 pounds of processed tomatoes are consumed per capita per year.[178] Applying these figures locally, up to 31 million pounds of tomatoes are consumed in Lane County annually: 7 million fresh and 24 million canned. Currently, only 19 percent (5.8 million pounds) of the tomatoes consumed in Lane County are produced locally. This figure suggests opportunity for local growth in this market.

The Good Company's 2006 institutional demand survey revealed a demand for local tomatoes at the institutional level which was further demonstrated by numerous institutional requests on the FoodHub site.

The local tomato market has the opportunity to be price competitive. The price point for tomatoes is directly linked to the shipping-point price. On average, shipping costs account for approximately one-fourth of the retail value.[179] Therefore, local tomatoes have potential for increased demand based on competitive price.

Supply Chain Gaps

There are a number of barriers to the tomato supply chain in Lane County. From a production standpoint, all of the tomatoes currently grown are sold at the fresh market. However, through extending the growing season there may be opportunities to expand production. From an infrastructure standpoint, Lane County is not equipped to process tomatoes. Furthermore, due to the proximity to California (the biggest producer of tomatoes for processing in the country), Lane County is at a competitive disadvantage. Interviews with experts in the field noted that it would take huge efforts and infrastructure costs to grow tomatoes for processing at a cost competitive price in Lane County.

Supply Chain Analysis

This analysis of the tomato supply chain examines minimal processing for fresh products, not canned or jarred tomatoes. The analysis of the tomato supply chain relied heavily on 2009 purchasing and sale data provided by Organically Grown

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[176] Meyers, Jim. "Extension Service Garden Hints." *OSU develops tomatoes especially for PNW gardeners* . Oregon State University, n.d. Web. 10 Jun 2010. <http://extension.oregonstate.edu/news/story.php?S_No=281&storyType=garde>.

[177] : "Commodity Data Sheets." *Oregon Agricultural Information Network.* Oregon State University, 2010. Web. 1 June, 2010.

[178] "Food Availability (Per Capita) Data System." *USDA Economic Research Service*. N.p., n.d. Web. 4 Jun 2010. <http://www.ers.usda.gov/data/foodconsumption/>.

[179] "Tomatoes Briefing Room." *Economic Research Service, USDA*. USDA, n.d. Web. 10 Jun 2010. <http://www.ers.usda.gov/Briefing/Archive/Tomatoes/>.

Company (OGC) to obtain a purchase and sale price and estimate freight. Snotemp, a local cold storage facility, estimated average storage length of a tomato to be about half a month (confirmed by OGC) and the cost to store tomatoes at a climate controlled facility to be approximately $0.01 per pound charged on a monthly basis. Finally, we assumed that the cost to wash apples would be close to the cost to wash tomatoes and transcribed the estimated $0.021 per pound estimate received from Borton Fruit, a farm based out of Washington.

Tomatoes, as a highly perishable and fragile crop, command high distributor premiums and freight expense because of the increased risk of damage and spoilage. Distributors must quickly find a buyer to keep from being stuck with unsold product past its prime. Because of consistently strong consumer demand for tomatoes, this risk of spoilage is less severe than other similarly perishable crops with slower turnover. This fact, coupled with Oregon's proximity to California's extensive tomato production, keeps prices and margins relatively lower than other similarly fragile produce. California's massive size and favorable climate creates a significant price advantage over Oregon growers. This advantage is amplified for processed tomato goods (such as sauce or salsa) as processed goods can be stored for years and shipped in bulk in harsh conditions without much risk of damage. Thus, for this project, raw tomato product is the focus of the competitive analysis as it is the tomato product that Oregon growers can be the most competitive against California.

With Oregon's 2009 prices, of the $2.35/lb distributor selling price, approximately $0.73 will be spent to get the tomato from the farmer to the distributor's buyer as illustrated in Table 5-2 and Figure 5-1 below.

Table 5-2 Supply Chain Analysis for Tomatoes

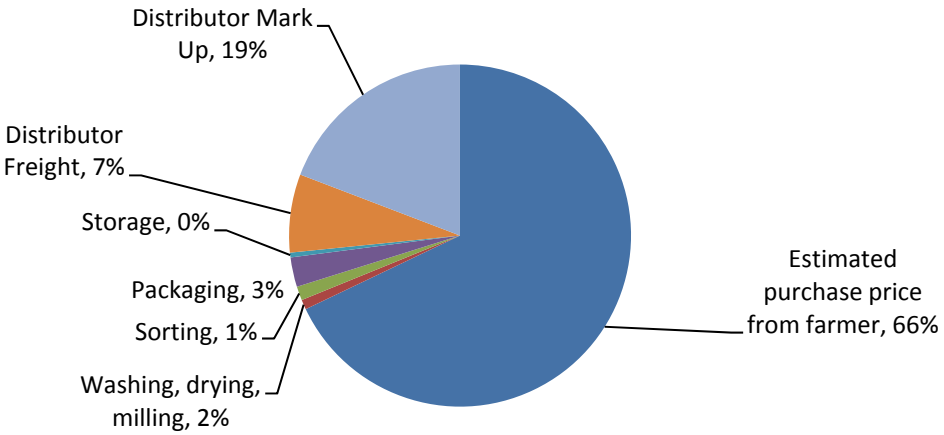
	Estimated price per pound	Expense as percentage of distributor sale price	Expense as a percentage of supply chain costs	Potential revenue if current supply was processed locally at local price	Potential revenue if current supply was processed locally at current price	Potential revenue if entire demand was processed locally at local price	Potential revenue if entire demand was processed locally at current price
Purchase price from Farmer	$ 1.54	66%		$ 8,658,046	$ 7,016,536	$ 46,192,779	$ 37,434,926
Washing, drying, milling	$ 0.02	1%	3%	$ 117,749	$ 95,424	$ 628,218	$ 509,112
Sorting	$ 0.03	1%	4%	$ 168,397	$ 136,470	$ 898,438	$ 728,100
Packaging	$ 0.06	3%	9%	$ 356,215	$ 288,679	$ 1,900,495	$ 1,540,174
Storage	$ 0.01	0%	1%	$ 56,132	$ 45,490	$ 299,479	$ 242,700
Distributor Buy Price	$ 1.67						$ -
Distributor Freight	$ 0.17	7%	23%	$ 943,410	$ 764,546	$ 5,033,324	$ 4,079,038
Distributor Mark Up	$ 0.44	19%	60%	$ 2,447,997	$ 1,983,873	$ 13,060,661	$ 10,584,444
Distributor Sale Price	$ 2.27						
Potential economic impact				$ 4,089,901	$ 3,314,482	$ 59,355,348	$ 48,101,957

Source: See Appendix F.

This analysis uses the 2009 Lane County supply and demand for tomatoes to estimate the potential revenues correlated with each step in the supply chain. The "potential revenue if current supply was processed locally" columns provide

potential revenues if processing of the current production was localized and the "potential revenue if entire demand was processed locally" columns provide potential revenues if processing of the entire local demand was processed locally. It includes these estimates based on the current price for local tomatoes and the current general price for tomatoes (not necessarily local). This general price data comes from OAIN. Presumably the eventual price would fall somewhere in between- lower than current local prices, but higher than current general prices. To understand the potential economic impact of relocalizing current tomato processing, current purchase price from the farmer should not be included. To understand the potential economic impact of relocalizing total tomato demand, current supply is subtracted from purchase price from the farmer.

Figure 5-1 Tomato Supply Chain Expenses as Percentage of Distributor Sale Price



Source: CPW

Of the six crops analyzed, distributor mark-up for tomatoes was 2 percent higher than the average (below apples and salad greens). However, when looking at the total expense per pound sold, the Oregon distributor's mark up amounts to $0.44/lb, more than $0.15 above than any of the other crops. Additionally, this data shows that an Oregon distributor will spend approximately $0.17 per pound in shipping the product from the farmer to their facility and then from their facility to the retail purchaser. This is this highest freight cost per pound out of any of the six focus crops. Using data on the National supply chain study by the Iowa State University[180] and a 70 percent capacity assumption for a 33,000/lb capacity semi-truck, for tomatoes in the national supply chain to break-even with the freight cost

[180] "Transaction Cost Case Studies for Six Iowa Food Producers." The Leopold Center for Sustainable Agriculture. July 2007. Web. 13 August 2010. (http://www.leopold.iastate.edu/research/grants/files/2006-M02.pdf)

of a local distributor, it would need to travel less than 1,800 miles. As distributors questioned did not purchase completely locally, this break-even mileage could be dramatically less if only local tomatoes were purchased. However as it is only approximately 650 miles from Eugene to central California, a local distributor would need to cut current freight expense in half in order to be price competitive with California shipped tomatoes.

Conclusions

The economic development potential for tomatoes is high.

The total local cost to sort, wash, and package a raw tomato product only amounts to $0.12 or 5 percent of the distributor sale price. Thus, efforts to make local raw tomato products more competitive should focus on either farming related expenses (harvesting and growing technologies, special certification, or niche market products), freight (fleet sharing, infrastructure improvements), or distributor mark-up expenses (risk allocation). Distributor mark-up, being the largest cost to the local supply chain, should be addressed in any strategy to make Oregon tomatoes more cost efficient. This can be done by shortening the supply chain and selling directly to bulk institutional consumers, or by sharing the burden of risk currently posed upon the local distributors to other parties of the supply chain. Distributors would be more willing to accept a lower margin of profit if they had more stability.

The potential economic impact of localizing the processing of the current supply of tomatoes is between $3 and $4 million. If all local demand were met, between $48 and $61 million could be created. Meeting this demand is limited by land availability, however. There would be significant economic impacts on farmers, if they were able to market their tomatoes as local. Most of the post-farm potential economic impact of local processing would go to distributors. Packaging, which accounts for 9% of the costs once tomatoes leave the farm, is another segment that has the potential to generate significant income in Lane County. This opportunity is strengthened due to the possible availability of unused packaging equipment in the county, such as box folders.

Current Local Supply Chain of Beans

Overview

Until recently, beans were not grown commercially in Lane County. This creates a steep learning curve, and farmers and experts in the field are still determining what beans grow best. It also limits the amount and types of data available to evaluate bean production. Reports from the Southern Willamette Valley Bean and Grain Project suggest that various varieties of common beans (e.g. black beans, pinto beans, kidney beans, etc.) grow well, as do garbanzo beans. Lentils may also grow well, but little success has been had thus far.[181]

[181] Armstrong, Dan. "The Southern Willamette Valley Bean and Grain Project -- Project Report Three." Mud City Press. January 20, 2009.

Demand

In 2000, U.S. per capita consumption of dry beans was 7.6 pounds per person. However, this number varies greatly by region, with the West consuming the most—13.4 pounds per person.[182]

Institutions require products that are largely pre-processed. However, the Lane County Jail and the University of Oregon identified using dry beans in their weekly menus.

Dried, canned, and other bean products are typical items at any grocery store. Some of the local natural foods stores in Eugene (e.g. Sundance) sell local beans in their bulk sections. Because of processing requirements, most beans sold at grocery stores are purchased through distributors.

Value-added bean products for retail sale include: bean dip, hummus, bean salad, baked beans, canned soups and stews, salsas with beans, and refried beans.

Gaps in the Supply Chain

At this early stage, there is a lack of sufficient farmer knowledge, skills, and experience to grow beans profitably. Larger-scale drying facilities may be necessary to expand bean production. Storage facilities may also be necessary, depending on production levels. There is a need for processed local bean products on the market. Currently the only local bean products available are dried beans.

Supply Chain Analysis

The bulk of the data for beans came from interviews with Oregon companies Truitt, Stahlbush, and Hummingbird Wholesale. Purchase and sale prices were based on average prices for organic beans bought last year by Hummingbird Wholesale. Freight expense ranged from $0.02 to $0.10 per pound per leg of travel from the three companies interviewed. With two legs of travel (to the distributor and from the distributor) we averaged the estimates to reach a $.04 per leg estimate, or $.08 total in freight per one pound of dried beans. We also assumed that the beans would be dried in the field and not in a separate facility (as is most common currently in Oregon) and thus would not incur any additional cost to the bean supply chain. Distributor mark-up (estimated based on distributor buy and sell data), washing expenses, and packaging costs, and storage were also estimated through those interviews.

The bean supply chain is less costly than more perishable crops as the dry product may be stored for long periods and it is unlikely to be damaged or spoiled in transit. The risk of spoilage is undertaken by the farmer during and prior to the bean drying process and thus the farmer retains a higher percentage of the crops retail value compared to crops where the distributor carries more of the risk. As the distributor for dry beans only carries minimal risk, they can apply only a small margin and still be confident in maintaining a certain level of profitability. Out of

[182] "The U.S. Dry Bean Market in 2001/02," 2002, USDA Economic Research Service, 15 April 2010 <http://www.ers.usda.gov/briefing/drybeans/PDFs/DBMarket02.pdf>.

the six focus crops, only grain had a lower distributor mark-up. Consistent demand and low processing costs allows the supply chain for beans to add only approximately $0.17/lb to an estimated $0.85 distributor sale price. These supply chain expenses are illustrated in the below graphs.

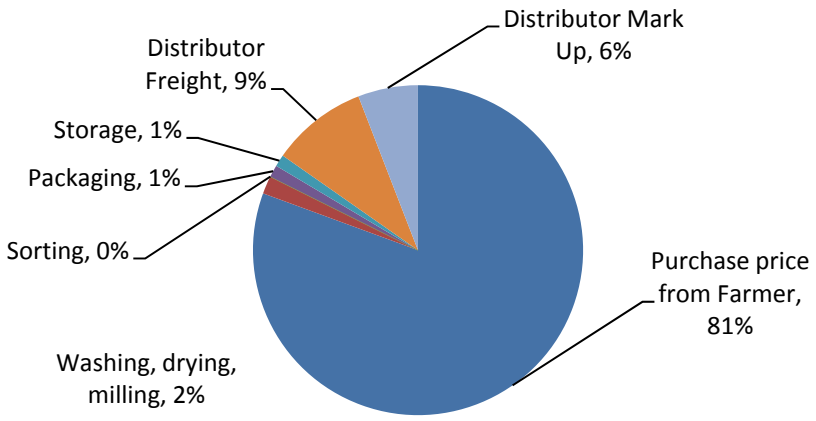
Table 5-3 Supply Chain Analysis for Beans

	Estimated price per pound	Expense as percentage of distributor sale price	Potential revenue if entire demand was processed locally at local price
Purchase price from Farmer	$ 0.69	81%	$3,129,205
Washing, drying, milling	$ 0.02	2%	$68,523
Sorting	$ -	0%	$0
Packaging	$ 0.01	1%	$45,682
Storage	$ 0.01	1%	$45,682
Distributor Buy Price	$ 0.72		
Distributor Freight	$ 0.08	9%	$228,409
Distributor Mark Up	$ 0.05	6%	$228,409
Distributor sale Price	$ 0.85		
Potential economic impact			$3,745,909

Source: Appendix F.

Because supply and non-local price information are unavailable for beans, this analysis calculates only potential economic impact of localization of bean production and processing at the local price. However, the supply chain analysis suggests that currently much of the price of beans goes to the farmer. Focusing on expanding production may make more sense than on other parts of the supply chain.

Figure 5-2 Dry Bean Supply Chain Expenses as Percentage of Distributor Sale Price



Source: CPW

Additional certification and niche market production can help create larger margin for both the farmer and distributor as low bean margins make producing and selling dry beans reasonably profitable only if done in large quantities.

With North Dakota and Michigan accounting for over half the bean production in the United States**,** beans in the national supply chain most likely travel up to between 1,400 to 2,300 miles to get from North Dakota or Michigan to Eugene, Oregon.[183] Using freight data collected from Iowa State University and capacity assumptions for a 33,000/lb capacity semi-truck, freight from a national supply chain may cost between $0.13-0.21/lb if sourced from those two states.[184] As bean freight cost for a local distributor is about $0.08/lb, the break-even distance between a bean in the local supply chain compared to the national supply chain is about 890 miles. Oregon bean growers therefore should be able to control a significant cost advantage in regards to freight to those in the national supply chain. Because of the few remaining supply chain expenses beyond freight, efforts to expand Oregon bean production should be focused on reducing the risk to the farmer or increasing the farmer's profitability. This can be done through distributor supported agriculture efforts to shift the burden of risk or by connecting and educating farmers about niche markets or special certification opportunities that command larger profit margins.

[183] "Dry Beans." Economic Research Service. 26 August 2010. Web. www.ers.usda.gov/Briefing/DryBeans Acessed 28 September 2010.

[184] "Transaction Cost Case Studies for Six Iowa Food Producers." The Leopold Center for Sustainable Agriculture. July 2007. Web. 13 August 2010. (http://www.leopold.iastate.edu/research/grants/files/2006-M02.pdf)

Conclusions

The economic development potential for beans is unknown.

Although limited data is available on bean production or prices, due to the work of the Bean and Grain Coalition, farmers in Lane County are increasing their production of beans. Hummingbird Wholesale says that local production does not meet current demand and Hummingbird is working with growers to increase that production. Farmers and distributors in Lane County see potential revenues in increased bean production. Analysis suggests that if the entire demand for beans was produced and processed locally, there would be about $3.7 million in potential revenues.

Apple Supply Chain Analysis

Overview

The Willamette Valley is considered mid- to late-season district for apple production. This means that Lane County apples will mature slightly later than apples in other areas of the state such as Hood River and Josephine County. While apple production is centered in these other areas, Lane County's production is significant. In 2007, Lane County grew 5.4 million pounds of apples.[185]

Gaps in the Supply Chain

While Lane County has production, distribution and some storage facilities for unprocessed apples, there are few local processors for value added apple products. In addition, there is a lack of apple sorting facilities for unprocessed apples. If unprocessed apples were sorted (by size), these apples could better access various institutional markets.

Demand

Based on interviews with local authorities on the subject, in addition to the results of a survey completed by The Good Company of institutional buyers, we know that apples are in high demand. School district in particular use large quantities of apples. However, these school districts do prefer the smaller apples as they are providing the fruit to children.

The per capita consumption of fresh apples in Lane County is 16.4 pounds. Canned apples, apple juice, frozen apples, dried apples, and other forms of processed apples are also used in Lane County.

Supply Chain Analysis

Much of Oregon's apples are sold on farm or exported. As a result, in order to obtain apple supply chain data, Borton Fruits, a Washington orchard, was interviewed as they would have similar labor costs and climate to Oregon orchards. Borton Fruit and SnoTemp provided their estimates for packaging,

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[185] "Commodity Data Sheets." *Oregon Agricultural Information Network.* Oregon State University, 2010. Web. 1 June, 2010.

sorting, washing and storage. Organically Grown Company (OGC) provided 2009 raw data as to purchasing, freight, sale prices, and distributor mark ups.

Most of Oregon's apples are exported despite strong state-wide demand for the crop. OGC argued this exportation occurs due to the lack of supporting infrastructure and automation in Oregon's orchards. As labor costs are high and many orchards do not have the size required to merit mechanizing their harvesting and sorting process, it is often easier for the orchards to sell on-farm or export their product to be processed and sold elsewhere where economies of scale exist (like Washington and California). Selling directly to the end consumer is a good way for the farmer to earn a higher premium for their crop by significantly shortening the supply chain. The cost differences between a direct sell and purchase of apples through the traditional national supply chain are illustrated in the Table 5-4.

Table 5-4 ERS Supply Chain Analysis for Apples

	Bulk Sales WA	Bulk Sales NY	Bagged Sales NY	Direct Sale Farm	Intermediary Institutional Purchaser
Producer	$ 0.26	$ 0.26	$ 0.26	$ 0.50	$ 0.26
Packer-shipper	$ 0.40	$ 0.45	$ 0.34	$ -	$ 0.06
Transport	$ 0.23	$ 0.03	$ 0.03	$ -	$ -
Wholesaler	$ -	$ -	$ -	$ -	$ 0.10
Retailer	$ 1.00	$ 0.76	$ 0.37	$ -	$ 0.48
Total Retail value	**$ 1.89**	**$ 1.50**	**$ 1.00**	**$ 0.50**	**$ 0.90**

Source: Robert P. King, Michael S. Hand, Gigi DiGiacomo, Kate Clancy, Miguel I. Gómez, Shermain D. Hardesty, Larry Lev, and Edward W. McLaughlin. "Comparing the Structure, Size, and Performance of Local and Mainstream Food Supply Chains." *Economic Research Service Report Number 99*. U.S. Department of Agriculture, June 2010. Web. 16 August 2010.

Farmers who sell directly to the end consumer almost double their revenue, but this approach has risks. On-farm sellers do not contract sales of their crop ahead of time and thus are vulnerable to being left with unsold fruit. This ERS report found that within the east coast, the cost of freight was $0.03/lb, which can be used to approximate non-local freight costs for west coast producers and suppliers because the bulk of apples on the west coast are sourced from Washington and California.

As illustrated in Table 5-5, the local supply chain uses about $0.08/lb in freight. For this freight to be cheaper than the national supply chain (using the same Iowa State University study and assumptions cited above for the previous crops), the national apple would have to travel over 880 miles to get to Oregon. Additionally, due to strong demand, national distributors can maintain low margins. The apple's high turnover helps mitigate a national distributors risk of spoilage. Smaller local distributors face more risk of spoilage because of lower turnover and therefore charge higher mark-up. Sharing the spoilage risk is one method to try to reduce local supply chain expenses. The next largest expense for the local apple supply chain was the packaging costs as illustrated Table 5-5.

Table 5-5 Supply Chain Analysis for Apples

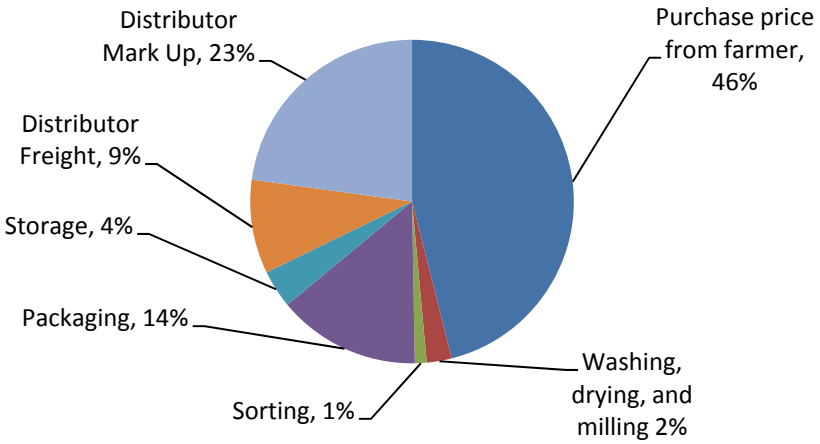
	Estimated price per pound	Expense as percentage of distributor sale price	Expense as a percentage of supply chain costs	Potential revenue if current supply was processed locally at local price	Potential revenue if current supply was processed locally at current price	Potential revenue if entire demand was processed locally at local price	Potential revenue if entire demand was processed locally at current price
Purchase price from Farmer	$ 0.39	46%		$ 2,056,624	$ 1,221,497	$ 6,727,351	$ 3,995,596
Washing, drying, milling	$ 0.02	2%	5%	$ 111,262	$ 66,082	$ 363,946	$ 216,159
Sorting	$ 0.01	1%	2%	$ 53,040	$ 31,502	$ 173,497	$ 103,046
Packaging	$ 0.12	14%	26%	$ 636,480	$ 378,026	$ 2,081,968	$ 1,236,549
Storage	$ 0.03	4%	7%	$ 169,728	$ 100,807	$ 555,191	$ 329,746
Distributor Buy Price	$ 0.57						$ 812,184
Distributor Freight	$ 0.08	9%	17%	$ 1,019,967	$ 605,792	$ 3,336,379	$ 1,981,586
Distributor Mark Up	$ 0.19	23%	42%	$ 1,019,967	$ 605,792	$ 3,336,379	$ 1,981,586
Distributor Sale Price	$ 0.84						
Potential Economic Impact				$ 3,010,444	$ 1,788,002	$ 14,518,088	$ 9,434,954

Source: Appendix F.

This analysis uses the 2009 Lane County supply and demand for apples to estimate the potential revenues correlated with each step in the supply chain. The "potential revenue if current supply was processed locally" columns provide potential revenues if processing of the current production was localized and the "potential revenue if entire demand was processed locally" columns provide potential revenues if processing of the entire local demand was processed locally. It includes these estimates based on the current price for local apples and the current general price for apples (not necessarily local). This general price data comes from OAIN. Presumably the eventual price would fall somewhere in between- lower than current local prices, but higher than current general prices. To understand the potential economic impact of relocalizing current apple processing, current purchase price from the farmer should not be included. To understand the potential economic impact of relocalizing total apple demand, current supply is subtracted from purchase price from the farmer.

According to CPW analysis, 12,844 acres in Lane County are suitable for apple production, based on their soil type (see Appendix K, Map K-2). The Oregon Agricultural Information Network identified the yield of apple orchards in Lane County to be 450 boxes per acre in 2009, or approximately 18,900 pounds per acre.[186] This suggests that Lane County has enough suitable land to produce more apples than it demands. However, if this land were put into apple production, it could not be used for other crops or other land uses.

Figure 5-3. Apple Supply Chain Expenses as a Percentage of Distributor Sale Price



Source: CPW

Conclusions

The economic development potential for apples is high.

[186] "OAIN Data." *Oregon Agricultural Information Network*. Oregon State University, n.d. Web.

Because apples on the west coast all ripen within a short window and the Willamette Valley lacks the proper infrastructure to store a significant amount of the apple crop, small Willamette Valley farmers must sell all their fruit within a short period of time. Similar to tomato growers in Oregon, local apple growers have a less favorable climate than California and Washington and face tougher mold issues and a smaller economy of scale. These local conditions suggest that direct competition may be difficult. As such, one method to make the local supply chain price competitive is to look for a way to differentiate their product or shorten the supply chain. This can be done by having farmers sell in bulk directly to periodic institutional buyers (like schools or correctional facilities) or by reducing the distributor expenses in the supply chain by assuming some of their risk. In short, either dramatic infrastructure investment or supply chain adjustment will be needed to make Oregon apple growers more cost effective than the massive apple producers of California and Washington. However, because demand for apples is so high the potential for economic development is high as well.

The potential economic impact of localizing the processing of the current supply of apples is between $1.5 and $3 million. If all local demand were met, between $9 and $14 million could be created. Meeting this demand is limited by land availability, however, and increasing production would take at least five years for orchards to begin production. Most of this potential economic impact would go to distributors. Packaging, which accounts for 26% of the costs once apples leave the farm, is another segment that has the potential to generate significant income in Lane County. Storage facilities have a potential revenue of between $101,000 and $170,000 storing current production, and $330,000 and $555,000 meeting total Lane County demand.

Winter Squash and Pumpkin Supply Chain Analysis

Overview

As of 2007, Lane County has 240 acres in squash and pumpkins, with a yield of roughly ten tons per acre. At a price of $198 per ton, and with 96 percent of the crop sold, this yielded total annual sales of $547,000.[187] According to the Locally Grown Guide of 2009, there are at least 32 local farms producing winter squash and at least 29 producing pumpkins.[188] In 2007, Lane County produced 450,000 pounds of winter squash.[189]

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[187] "OAIN Data." *Oregon Agricultural Information Network*. Oregon State University, n.d. Web.

[188] "Locally-Grown Farm Directory." *Willamette Food and Farm Coalition*. N.p., n.d. Web. 10 Jun 2010. <http://www.lanefood.org/directory/lgd.php>.

[189] "2007 Census of Agriculture: Oregon State and County Data." *2007 Census of Agriculture.* U.S. Department of Agriculture, Dec. 2009. Web. 1 June 2010.

Demand

There is no demand data available for winter squash. Per capita consumption for pumpkins is about 5.28 pounds per year. In Lane County, that is equal to about 1.8 million pounds.[190]

In Lane County, there is institutional demand for squash and pumpkins. It is unknown whether they purchase frozen or canned. There is almost limited institutional demand for fresh product due to the laborious processing requirements.

Grocery stores purchase this product in fresh, frozen, and canned forms. Fresh product may come direct from farms or from distributors. Frozen and canned squash and pumpkins are purchased from distributors.

Gaps in the Supply Chain

Local demand for winter squash is limited and seasonal. Although many producers sell this crop, many large institutions, such as schools and hospitals, require it to be pre-processed (cut, peeled and canned). Currently the local squash being processed in Lane County is not being differentiated from non-local squash, and processed squash is not marketed as local.

Supply Chain Analysis

The bulk of the supply chain data for Winter Squash came from Organically Grown Company's (OGC) 2009 purchase and sales data. Based on interviews with Snotemp and Stahlbush, it appears that winter squash is stored for an average of six months before being sold. Freight data was supplied from OGC's database and estimates on the cost of washing squash was assumed to be similar to the cost to wash apples given provided by Borton Fruit. This analysis was based on a supply chain that sold raw or frozen squash and did not account for cooking or canning costs.

Washing and sorting costs for winter squash are relatively inexpensive because of the crop's durability and size. Squash maintained about average packaging costs, but the cost to cold store squash is relatively high compared to the other focus crops. This is because squash is more prone to damage than beans and wheat, and stored much longer than the average salad green, tomato, or apple. Seasonal demand is the main factor in squash's long storage time and makes it a more difficult item to sell. Because of this low off-season turn-over, local distributors have relatively high mark-ups for raw squash products. When coupled with high freight per pound, as compared as a percentage of the sale price, there is only a small margin remaining for the farmer. Thus, per interviews with Hummingbird Wholesale, Stahlbush and OGC, squash is often grown sporadically as a cover crop to keep weeds down in unused field space. These expenses are illustrated in Table 5-6 and Figure 5-4.

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[190] Food Availability (Per Capita) Data System." *USDA Economic Research Service*. N.p., n.d. Web. 4 Jun 2010. <http://www.ers.usda.gov/data/foodconsumption/>.

Table 5-6 Supply Chain Analysis for Squash

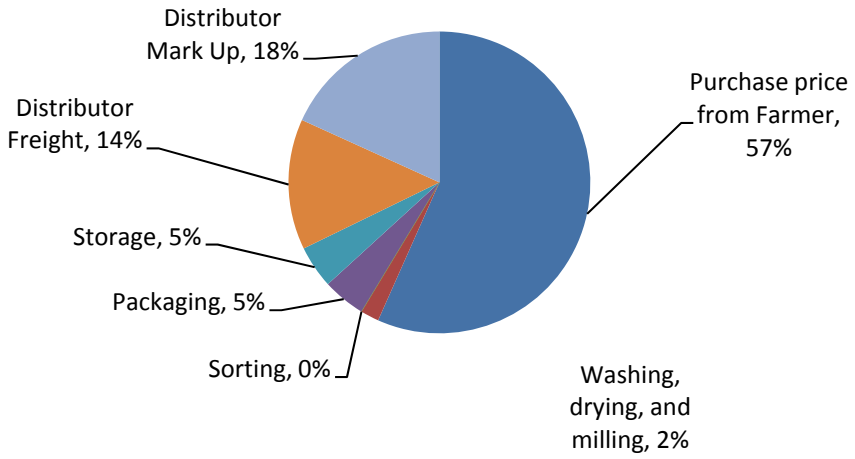
	Estimated price per pound	Expense as percentage of distributor sale price	Expense as a percentage of supply chain costs	Potential revenue if current supply was processed locally at local price	Potential revenue if current supply was processed locally at current price	Potential revenue if entire demand was processed locally at local price	Potential revenue if entire demand was processed locally at current price
Purchase price from Farmer	$ 0.60	57%		$ 268,078	$ 26,771	$ 1,094,158	$ 109,268
Washing, drying, milling	$ 0.02	2%	5%	$ 9,440	$ 943	$ 38,528	$ 3,848
Sorting	$ -	0%	0%	$ -	$ -	$ -	$ -
Packaging	$ 0.05	5%	11%	$ 21,641	$ 2,161	$ 88,326	$ 8,821
Storage	$ 0.05	5%	11%	$ 21,600	$ 2,157	$ 88,160	$ 8,804
Distributor Buy Price	$ 0.71						$ 26,970
Distributor Freight	$ 0.15	14%	32%	$ 86,215	$ 8,610	$ 351,885	$ 35,141
Distributor Mark Up	$ 0.19	18%	42%	$ 86,215	$ 8,610	$ 351,885	$ 35,141
Distributor Sale Price	$ 1.05						
Potential economic impact				$ 225,110	$ 22,480	$ 1,744,865	$ 201,220

Source: Appendix F.

This analysis uses the 2009 Lane County supply and demand for squash to estimate the potential revenues correlated with each step in the supply chain. The "potential revenue if current supply was processed locally" columns provide potential revenues if processing of the current production was localized and the "potential revenue if entire demand was processed locally" columns provide potential revenues if processing of the entire local demand was processed locally. It includes these estimates based on the current price for local apples and the current general price for squash (not necessarily local). This general price data comes from OAIN. Presumably the eventual price would fall somewhere in between- lower than current local prices, but higher than current general prices. To understand the potential economic impact of localizing current squash processing, current purchase price from the farmer should not be included. To understand the potential economic impact of localizing total squash demand, current supply is subtracted from purchase price from the farmer.

According to CPW analysis, 15,790 acres in Lane County are suitable for squash production, based on their soil type (see Appendix K, Map K-3). The Oregon Agricultural Information Network identified the yield of squash fields in Lane County to be 10 tons per acre in 2009.[191] This suggests that Lane County has enough suitable land to produce more squash than it demands. However, if this land were put into squash production, it could not be used for other crops or other land uses.

Figure 5-4. Winter Squash Supply Chain Expenses as Percentage of Distributor Sale Price



Source: CPW

Conclusions

The economic development potential for squash is low.

[191] "OAIN Data." *Oregon Agricultural Information Network*. Oregon State University, n.d. Web.

To address these problems, many companies like Stahlbush shorten the supply chain by growing squash and processing it at their on-site facilities. This increases their margins and allows more freedom as to when to bring the product to market due to the long shelf-life of canned squash.

With regards to fresh squash, national suppliers can pack their semi-trucks to capacity and store produce because of the extremely low risk of spoilage and damage. As such, using the same national freight assumptions used for the prior focus crop analysis (for a 33,000 lb capacity semi-truck filled to 70 percent capacity), the national supplier would need to ship their squash over 1,600 miles to be more costly than a local distributor's freight costs. As local distributors do not purchase 100 percent local squash; this break even mileage could be much lower if local production were to increase. Due to winter squash's low producer margin, finding ways to make squash production more profitable for local farmers is the most notable way to reach this goal. Efforts to achieve higher production could focus on special certification, niche market production, or a shortening of the supply chain through in-house processing or direct sales.

The potential economic impact of localizing the processing of the current supply of squash is between $22,480 and $225,110. If all local demand were met, between $201,220 and $1,744,865 could be created. These ranges are so large because the price of local squash is much five times that of the price of non-local squash suggested by OAIN data. Meeting the demand for squash is limited by land availability, although squash is a good cover crop for many farmers. Most of this potential economic impact would go to distributors. Compared with other crops, the potential economic impact of expanded squash production or processing localization is smaller. In addition, Stahlbush Farms is involved in many parts of the local supply chain and has historically taken good advantage of local expansion opportunities.

Wheat Supply Chain Analysis

Overview

Lane County has a history of wheat production. Soft winter wheat is the most commonly grown variety, because it is fall planted, and fits the climate profile of the area. However, there is some evidence that spring-planted hard red and white varieties can be grown as well.[192]

As of 2007, there were 1,700 acres in wheat production in Lane County. Productivity was an average of 90 bushels per acre. The crop sold for $6 a bushel in that year, for a total value of $918,000.[193] In 2007, 9.1 million pounds of wheat

[192] Harry MacCormack, Interview., Brie Becker (2 April 2010).

[193] "OAIN Data." *Oregon Agricultural Information Network*. Oregon State University, n.d. Web.

were grown in Lane County. Since then, production has increased to 20.1 million pounds.[194]

Demand

Per capita consumption of grains, as reported by the USDA's Agricultural Research Service, is about 126 pounds per year. This equates to a need in Lane County of roughly 47.8 million pounds.

In Lane County, institutions and grocery stores buy wheat as a milled product, and also as wheat products, such as pastas and breads. This product is purchased from distributors.

Crop Specific Assumptions

Supply Chain Analysis

The wheat supply chain, like beans, is short and inexpensive. Data for the purchase, sale, freight, packaging, and milling cost were provided through interviews with Hummingbird Wholesale. An interview with Snotemp provided estimated cold storage costs indicated in Table 5-7. It was assumed that grains would be milled and cold stored rather than stored within silos and milled only once sold to the retail purchaser.

Wheat has the largest and most consistent demand of any of the focus crops. However, as a durable American staple, production of wheat is done at such enormous scales that it has extremely low margins. As such, local farming and selling of wheat is often only profitable if grown as a niche market product or done at such a large scale that a $0.01 to $0.03/lb mark-up is enough to cover overhead and market fluctuations. This small margin leaves little room for error and gives little incentive to farmers and local distributors alike to support increasing local production.

According to staff at OGC and Hummingbird Wholesale, because of falling grass seed prices many farmers have taken up growing wheat until they figure out what to grow next or until grass seed prices rebound. Wheat is an easy substitute for grass farmers to grow because it requires only a minimal additional investment in knowledge or equipment. With the growth of local wheat processing infrastructure such as mills and silos, a larger margin may incentivize farmers to keep growing wheat in the future and local distributors to buy more of it. A focus on specialized wheat may also help farmers from requiring enormous production in order to stay afloat.

[194] "Commodity Data Sheets." *Oregon Agricultural Information Network.* Oregon State University, 2010. Web. 1 June, 2010.

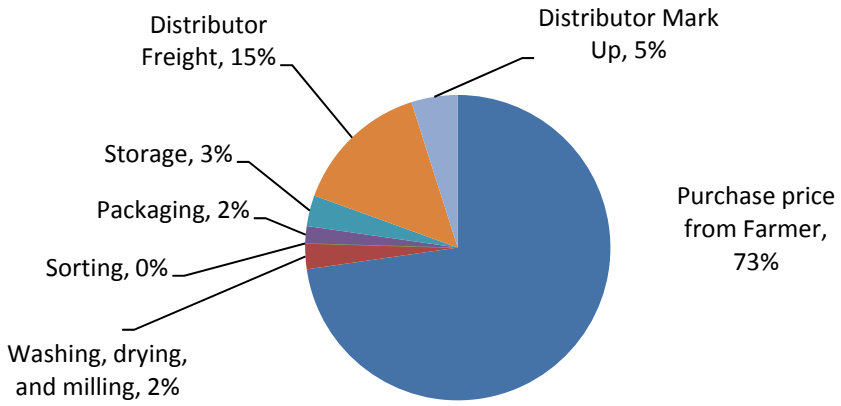
Table 5-7 Supply Chain Analysis for Wheat

Estimated price per pound	Expense as percentage of distributor sale price	Expense as a percentage of supply chain costs	Potential revenue if current supply was processed locally at local price	Potential revenue if current supply was processed locally at current price	Potential revenue if entire demand was processed locally at local price	Potential revenue if entire demand was processed locally at current price	Potential revenue if potential supply was processed locally at local price	Potential revenue if potential supply was processed locally at current price
$ 0.40	73%		$ 8,064,000	$ 1,246,255	$ 19,206,396	$ 2,968,261	$ 7,110,120	$ 1,098,837
$ 0.02	3%	10%	$ 302,400	$ 46,735	$ 720,240	$ 111,310	$ 266,630	$ 41,206
$ -	0%	0%	$ -	$ -	$ -	$ -	$ -	$ -
$ 0.01	2%	7%	$ 201,600	$ 31,156	$ 480,160	$ 74,207	$ 177,753	$ 27,471
$ 0.02	3%	12%	$ 362,880	$ 56,081	$ 864,288	$ 133,572	$ 319,955	$ 49,448
$ 0.44						$ 593,652	$ -	$ -
$ 0.08	15%	53%	$ 544,320	$ 84,122	$ 1,296,432	$ 200,358	$ 1,422,024	$ 219,767
$ 0.03	5%	18%	$ 544,320	$ 84,122	$ 1,296,432	$ 200,358	$ 479,933	$ 74,171
$ 0.55								
			$ 1,955,520	$ 302,217	$ 15,799,947	$ 3,035,462	$ 1,712,415	$ 264,646

Source: See Appendix F.

This analysis uses the 2009 Lane County supply and demand for wheat to estimate the potential revenues correlated with each step in the supply chain. The "potential revenue if current supply was processed locally" columns provide potential revenues if processing of the current production was localized and the "potential revenue if entire demand was processed locally" columns provide potential revenues if processing of the entire local demand was processed locally. It includes these estimates based on the current price for local wheat and the current general price for wheat (not necessarily local). This general price data comes from OAIN. Presumably the eventual price would fall somewhere in between lower than current local prices, but higher than current general prices. To understand the potential economic impact of localizing current wheat processing, current purchase price from the farmer should not be included. To understand the potential economic impact of localizing total wheat demand, current supply is subtracted from purchase price from the farmer.

Figure 5-5. Wheat Grain Supply Chain Expenses as Percentage of Distributor Sale Price



Source: CPW

Conclusions

The economic development potential for wheat is medium.

As farmers take significant risk growing a crop that may not yield a price sufficient to pull a profit, efforts to increase production should address a shifting or sharing of the risk. The next largest expense for wheat is freight. The average of $0.08/lb cost of freight amounts to 15 percent of the distributor's wheat sale price. Using the Iowa State University study and the same assumptions on national freight as in previous analysis, wheat through the national supply chain would need to travel more than 890 miles to be less efficient than the current local model.

Freight costs can be reduced by optimal positioning of milling and storing facilities or by selling directly to institutional bulk purchasers and thus dramatically shortening the normal distribution supply chain. As regular wheat production is a large scale and low margin industry, encouraging farmers to produce certified or specialized niche market grains would be a promising way to increase the overall wheat production in the Willamette Valley.

The potential economic impact of localizing the processing of the current supply of wheat is between $302,217 and $1,955,520. If all local demand were met, between $3,035,462 and $15,799,947 could be created. These ranges are so large because the price of local wheat is much higher than the price of non-local wheat. This range emphasizes the importance of localizing the processing infrastructure and making sure distributors can differentiate local wheat both in their logistics and marketing. Unlike other crops, people associate the processing of wheat as an important step in making it a local product. Meeting the demand for wheat is limited by land availability. Analysis of land suitable for winter wheat in Lane County revealed that 25,740 acres of irrigated land are suitable for wheat production in the Willamette Valley. Assuming a yield of approximately 11.5 bushels per acre, this creates an upper limit of 17,775,300 pounds that could possibly be produced in the Willamette Valley, assuming all 25,740 acres were converted to wheat. Converting all of this land to wheat would most likely result in a decrease in grass seed production, and could also result in a decrease in other food production as well, if this irrigated land is current used for food production. If this land were converted to wheat production, the potential economic impact would be between $264,600 and $1,712,400 (see Table 5-8). Map K-1 describes locations suitable for winter wheat production in Appendix K.

Table 5-8 Wheat Supply Chain with Potential Supply

	Potential revenue if potential supply was processed locally at local price	Potential revenue if potential supply was processed locally at current price
Purchase price from Farmer	$7,110,120	$1,098,837
Washing, drying, milling	$266,630	$41,206
Sorting	$0	$0
Packaging	$177,753	$27,471
Storage	$319,955	$49,448
Distributor Freight	$1,422,024	$219,767
Distributor Mark Up	$479,933	$74,171
Potential economic impact	$6,104,415	$943,410

Source: See Appendix F.

Salad Green Supply Chain Analysis

Overview

Salad greens can include lettuces, mesclun mix and spinach, as well as greens in the cabbage family such as endive. Salad mixes and coleslaw mixes are the most common value-added products. In 2007, Lane County produced 313,600 pounds of salad greens.[195]

[195] "2007 Census of Agriculture: Oregon State and County Data." *2007 Census of Agriculture.* U.S. Department of Agriculture, Dec. 2009. Web. 1 June 2010.

According to Tom Lively at Organically Grown Company, salad greens are some of the riskiest vegetables to grow and distribute due to their history of contamination. This is a result of a number of factors – they grow close to the ground and are easily exposed to pathogens and often get cut or damaged in processing, which creates a damp environment to support bacteria. They are often not washed by consumers, and are not cooked. Due to liability regulations, everyone in the supply chain can be held liable if there is an outbreak, regardless of where the contamination originated.

Gaps in the Supply Chain

New safety certifications can be prohibitively expensive for small farmers. In addition, processing equipment is prohibitively expensive for small farmers. Finally, Oregon's strict liability laws leave everyone in the supply chain vulnerable to lawsuit if there is any contamination. This leads to less interest in distributing salad greens, despite high demand.

Supply Chain Analysis

OGC provided the salad green data on the purchase and sale, freight and packaging data. A phone interview with the Portland Area CSA Coalition (PAC SAC) provided the data for washing costs. The analysis assumed that the average salad green is stored for a week or less in cold storage, as suggested in interviews with SnoTemp and OGC. The analysis assumes that the crops are grown without the aid and expense of a greenhouse.

Salad greens are a risky crop on multiple levels because of the high risk of contamination, spoilage, and damage. Because of this distributor-carried risk, the salad green supply chain contains the highest distributor mark up as a percentage of its sale price compared to the other focus crops in this study. Salad greens have particular packaging requirements to prevent damage and ensure a fresh and uncontaminated product. Therefore, freight and distributor costs are high. Due to these factors, the farmer is paid only about 52 percent of the distributor sale value as illustrated in Table 5-9.

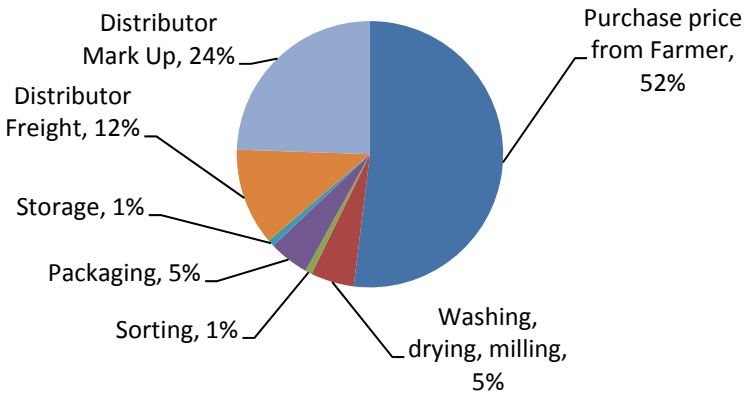
Table 5-9 Salad Green Supply Chain

	Estimated price per pound	Expense as percentage of distributor sale price	Expense as a percentage of supply chain costs	Potential revenue if current supply was processed locally at local price	Potential revenue if entire demand was processed locally at local price
Purchase price from Farmer	$ 0.62	52%		$ 194,907	$ 4,420,016
Washing, drying, milling	$ 0.06	5%	11%	$ 19,735	$ 447,546
Sorting	$ 0.01	1%	2%	$ 3,136	$ 71,117
Packaging	$ 0.06	5%	10%	$ 18,290	$ 414,766
Storage	$ 0.01	1%	2%	$ 3,136	$ 71,117
Distributor Buy Price	$ 0.76				
Distributor Freight	$ 0.14	12%	25%	$ 91,713	$ 2,079,838
Distributor Mark Up	$ 0.29	24%	51%	$ 91,713	$ 2,079,838
Distributor Sale Price	$ 1.20				
Potential economic impact				$ 227,724	$ 9,584,237

Source: See Appendix F.

This analysis uses the 2009 Lane County supply and demand for salad greens to estimate the potential revenues correlated with each step in the supply chain. The "potential revenue if current supply was processed locally" columns provide potential revenues if processing of the current production was localized and the "potential revenue if entire demand was processed locally" columns provide potential revenues if processing of the entire local demand was processed locally. It includes these estimates based on the current price for local salad greens. The current general price for salad greens (not necessarily local) was not available through OAIN. To understand the potential economic impact of localizing current salad green processing, current supply price from the farmer should not be included. To understand the potential economic impact of localizing total salad green demand, current supply is subtracted from purchase price from the farmer.

Figure 5-6. Salad Green Supply Chain Expenses as Percentage of Distributor Sale Price



Source: CPW

Compared to the USDA ERS National supply estimate of a Sacramento, CA company, local producers still make 20 percent more of the total pre-retail value than their national counterparts who are paid only 30 percent of the pre-retail value. Data for this national supply chain estimate is illustrated in Table 5-10.

Table 5-10. ERS Supply Chain for Salad Greens

	National Sales	Direct Farm Sale	Intermediary Co-op Purchaser
Producer	$ 0.79	$ 5.92	$ 3.00
Marketing	$ 0.02	$ 2.08	$ 0.75
Processor	$ 1.16		
Distributor	$ 0.77		
Retail Stores	$ 3.75		$ 2.24
Total retail Value	**$ 6.49**	**$ 8.00**	**$ 5.99**

Source: Robert P. King, Michael S. Hand, Gigi DiGiacomo, Kate Clancy, Miguel I. Gómez, Shermain D. Hardesty, Larry Lev, and Edward W. McLaughlin. "Comparing the Structure, Size, and Performance of Local and Mainstream Food Supply Chains." *Economic Research Service Report Number 99*. U.S. Department of Agriculture, June 2010. Web. 16 August 2010.

Locally distributed salad greens also have a lower processing cost as a percentage of pre-retail value than the national supply chain, making up only 24 percent of the total value compared to the 42 percent ERS national chain estimate. While economies of scale and automation would make washing, packing, and sorting cheaper for the national supply chain, freight is most likely the primary factor driving behind the national supply processing expense being higher than the local. It is difficult for a semi-truck to be packed to full weigh capacity because salad

greens must be packed lightly. This increases its mile per pound freight cost compared to the other crops

Conclusions

The economic development potential for salad greens is low.

With so many risk factors involved in the sale of salad greens, local producers could maintain a strong advantage over national suppliers due to difficulties in freight, spoilage, and contamination. Strategies to improve the local supply chain of salad greens could focus on many areas. Improving and automating the washing, drying and packaging stage could reduce the costs of this stage, which make up 11 percent of the pre-retail value. A wide variation of machine usage exists in the local salad green industry. While larger companies can use machines that largely automate these processes, smaller farms use hand tools and even modified household washing machines and driers to carry out these processes.

Efforts to streamline salad green supply chain expenses should definitely focus on distributor mark-up, the largest expense. Similar to the suggestions posed in the tomato section, as the higher distributor mark-up is the result of higher risk, spreading this risk to other parties in the supply chain would stabilize the profitability for distributors and thus coax them into accepting slightly lower margins for increased profit stability.

The potential economic impact of localizing the processing of the current supply of salad greens is about $227,724, assuming current local prices. If all local demand were met, about $9.5 million could be created. Meeting this demand would be limited by land availability.

Summary

Table 5-11 summarizes information about the potential revenues if the entire county's demand for beans, wheat, squash, tomatoes, apples, and salad greens were grown and processed locally. However, these estimates have key limitations:

- Lane County does not have enough land to grow enough food to meet the entire demand for these crops.
- As production and processing capacity expand toward meeting the entire local demand, prices will move further from the local price (high) and closer to the current price (low).

As a result, analysis should focus on potential revenue if current supply was processed locally at the current price. Still on average across these six crops, 38 percent of the cost of these crops is created post-processing. Even if demand could not be met locally due to land limitations, if Lane County was able to become a food processing center and the processing for Lane County's demand were localized, about $42 million would be created.

Table 5-11 Summary Table of Focus Crop Supply Chain

	Potential revenue if current supply was processed locally at local price	Potential revenue if current supply was processed locally at current price	Potential revenue if entire demand was processed locally at local price	Potential revenue if entire demand was processed locally at current price	Potential revenue if potential supply was processed locally at local price	Potential revenue if potential supply was processed locally at current price
Tomatoes	$ 4,225,988	$ 3,314,482	$ 61,330,330	$ 48,101,957		
Beans			$ 3,745,909			
Apples	$ 3,010,444	$ 1,788,002	$ 14,518,088	$ 9,434,954		
Squash	$ 225,110	$ 22,480	$ 1,744,865	$ 201,220		
Wheat	$ 890,460	$ 137,617	$ 20,191,947	$ 3,714,226	$ 6,104,415	$ 943,410
Salad Greens	$ 227,724		$ 9,584,237			

Source: See Appendix F.

CHAPTER 6. IMPLEMENTATION STRATEGIES

This chapter presents a set of recommended implementation strategies to facilitate the expansion of the local food market in Lane County. The key focus is on strategies that will result in economic activity in our region. The chapter begins with an overview of the economic development context and framework, and then summarizes the recommended implementation strategies.

Overview and Economic Development Context

While local food has many benefits, the primary objective of this study was to identify economic opportunities. Expanded local food production potentially provides new jobs and keeps money in the local economy. When money is spent on goods produced elsewhere, much of this money "leaks out" of the local economy. The less money that leaks out, the more there is left circulating within the local economy, benefiting community members – known as the "multiplier effect." Moreover, various studies have shown that local fruit and vegetable production and consumption have the potential to create significant economic impacts. A 2006 study in Iowa concluded that if Iowans purchased seven servings of fruits and vegetables from Iowa per day for just three months out of the year, almost 6,000 farming and direct marketing jobs would be created in Iowa.[196] A 2010 analysis of increasing local fruit and vegetable production in the upper Midwest calculated a jobs multipliers of 1.67 to 1.95, meaning that for every on-farm job directly created through increased production of local fruits and vegetables, up to 95 percent of a job is indirectly created elsewhere in the economy.[197] The strategies in this chapter aim to increase the production and consumption of local food in Lane County.

A number of organizations are already working to localize the food economy – for the purposes of economic development, food security and access to healthy food. These include government agencies, non-profits, and alliances of multiple groups. These projects complement this project's focus on economic development through food re-localization:

- **Oregon Solutions Lane County Food Distribution Project:** This project explores possibilities of local aggregation, storage, and distribution resources for Lane County to serve farmers, institutional buyers and others.[198]

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[196] Dave Swenson, The Economic Impacts of Increased Fruit and Vegetable Production and Consumption in Iowa: Phase II (Ames, IA: Leopold Center for Sustainable Agriculture, 2006).

[197] Dave Swenson, Selected Measures of the Economic Values of Increased Fruit and Vegetable Production and Consumption in the Upper Midwest (Ames, IA: Leopold Center for Sustainable Agriculture, 2010).

[198] Oregon Solutions Lane County Food Distribution Project. http://www.orsolutions.org/willamette/lanefood.htm

- **Food Hub:** Food Hub seeks to connect food buyers and food sellers in the northwest through an online directory and marketplace.[199]

- **Southern Willamette Valley Bean and Grain Project:** The Bean and Grain Project is a consortium of farmers, non-profits, community organizers, and business owners whose primary goal is to provide the southern Willamette Valley with year-round access to local food. Their work focuses on educating farmers about bean and grain production and helping them access local markets for these crops.[200]

The implementation strategies described in this chapter are based on information gathered from numerous interviews with people involved with the local food system, national case study research, and local and national quantitative data. These implementation strategies were selected based on their feasibility within the study area and their potential for adoption by the project partners. Many of these strategies are interrelated and would be much more effective if carried out together. The implementation strategies listed below are organized by the gaps that they address. **Detailed information for the implementation strategies listed below can be found in Appendix I.**

Framework for the Implementation Strategies

Through research about the Lane County food system, CPW reached the following conclusions:

1. The local food system is not ready for significant large investment. Someone needs to coordinate the development of a strategy for the local food system. This person must have a broader perspective than a single business or non-profit. The development of this strategy needs to occur before significant outside investment occurs.

2. The local institutional market is not large enough to change the food system alone. Institutional buyers must work in coordination with local food distributors to gain access to the local food they need. Food distributors and grocery stores are key to changing the local food system.

3. Small investments are less risky and more sensible than big. Small investments allow modest incremental investments in strategic areas. This report identifies some key opportunities for those modest, incremental investments.

4. These investments are best achieved through public-private partnerships. These partnerships help to establish the market, and then they allow the market to take over.

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[199] FoodHub. www.food-hub.org

[200] Southern Willamette Valley Bean and Grain Project. http://www.mudcitypress.com/beanandgrain.html

Phasing

The following strategies are organized by the gap that they address and the timeframe within which they will be carried out. The timeframes are defined as follows:

- Short term: 1-2 years
- Medium term: 2-3 years
- Long term: 3-5 years
- Ongoing: Strategies that will be in place over the long term

Summary of Market and Supply Chain Gaps

This study identified a number of gaps in the local food supply chain that were identified based on interviews with institutional buyers, local food experts, processors, distributors and storage facilities; quantitative information gathered from state and national sources on the supply and demand of local food; and a supply chain analysis that identified opportunities and constraints to make the local food supply chain more efficient. The gaps detailed in the following section include a lack of communication and access to the local food market, a lack of processing and storage infrastructure, the perception of risk in producing, purchasing and investing in local food, institutional requirements for purchasing local food, and inadequate access to capital. The implementation strategies addressed in this chapter help to eliminate these gaps. Detailed information for each strategy can be found in Appendix J.

Gap I. Lack of Linkages Between Growers and Local Markets

CPW research concluded that there is a disconnect between the people producing local food and the people buying it in Lane County, particularly food buyers at large institutions. Interviews with large institutional buyers revealed that they have limited resources to devote to food purchasing, and require that the food purchased be of consistent quality and dependable quantity. Working with multiple vendors increases costs and is time prohibitive. Furthermore, local processors, distributors and institutional buyers are often unaware of the local food available to them and how to access that food. On the production side, farmers do not know how to work with buyers to market the food they produce. Improved communication and relationships between producers and buyers is required to expand the local food market.

CPW recommends the following implementation strategies to aid in the communication and build relationships between growers and local food markets:

Short Term:

- **Local Food Coordinator:** Create a Local Food Coordinator position at the County level to build the local food market, coordinate between buyers and growers and conduct additional research on local food demand and capacity for growth in the local food market.

- **Develop Institutional Contracts that Require Local Sourcing:** Develop sample institutional contracts that incorporate the requirement or preference for local food.

Medium Term:

- **Institutional Clearinghouse:** Develop an institutional clearinghouse to improve the purchasing, billing, contracting and delivery logistics between local growers and large institutions.
- **Help Distributors Market Local Food**: Develop a "FedEx" distribution model where the distributor acts as the shipper connecting farms and buyers. This model decreases distribution costs and allows farm-specific information to be passed easily from farm to consumer.

Ongoing:

- **Optimize Food Distributor Logistics and Capacity:** Help distributors optimize distribution capacity and logistics that are incremental to meet the incremental nature of the change in demand for local food.

GAP II. LIMITED PROCESSING AND STORAGE CAPACITY

Lane County once housed a number of processing and canning facilities. However, in the last fifty years, these facilities closed down as the food industry was globalized and the large national scale of production put small and medium-size farms and processing facilities out of business. Some value-added facilities still exist in Lane County, however few of them source locally grown ingredients. Therefore, there are limited processing and storage facilities in Lane County – specifically for all six of the focus crops.

Furthermore, the number of small farms (less than 50 acres) is steadily increasing. In 2007, they accounted for 82 percent of the farms in Lane County.[201] This poses added complexity, as these farms generally do not have the volume or revenue stream to support on-site processing facilities. Improved processing and storage facilities are needed to allow local food products to be available year round, increasing the size and decreasing the seasonality of the local food market. Processing facilities are needed to meet the needs of large institutional demand and also increase value-added food products in the local economy; improved storage is needed to ensure the local food economy is a viable industry year-round.

CPW recommends the following implementation strategies to improve the processing and storage capacity in Lane County:

[201] United States. *2007 Census of Agriculture: Oregon State and County Data*. , 2009. Web. 31 May 2010. <http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Oregon/orv1.pdf>.

Short Term:

- **Research On-Farm Processing Needs of Mid-Sized Farms:** Interview farmers to determine the types of on-site equipment needed for on-farm processing. Prepare a feasibility study to assess the revenue stream and size of farm needed for this equipment and operational model to be cost effective.
- **Increase the Wheat Milling and Storage Operations:** Continue to provide funding at the County and City level to increase the wheat processing capacity.

Medium Term:

- **Tomato, Bean and Squash Co-Pack Facilities:** Build a new or expand existing co-pack facility to support small-and medium-sized farms and increase the opportunity to produce value-added products in Lane County.
- **Controlled Atmosphere Storage:** Build a Controlled Atmosphere storage facility to store apples and other fruits and vegetables year round.

GAP III. PERCEPTION OF RISK

Agriculture and food production carry inherent risks. Farmers often bear all of the risk on the production end. However, local food processors, distributors and buyers also face risks. One critical element of a strategy to build and sustain a strong local food economy is to foster a system in which farmers, processors, distributors, and others share the risks and returns associated with food production.

CPW recommends the following implementation strategies to mitigate risk between growers, distributors and processors.

Short Term:

- **Develop "Proof of Concept" through the EWEB Demonstration Farm:** Rely on the EWEB Demonstration Farm to demonstrate the viability of crops new to Lane County and crops with new markets. This demonstration should show both agricultural techniques and economic analysis of production and sales.

Medium Term:

- **Encourage Processor – and Distributor Supported Agriculture:** Provide funding opportunities to make processor and distributor supported agriculture possible. Utilize the Local Food Coordinator position discussed in Gap I above to build relationships between growers, processors and distributors.

GAP IV. INSTITUTIONAL AND GROCERY STORE REQUIREMENTS

Institutions and large grocery store chains often have particular insurance and certification requirements. These standards and certifications can represent an economic burden for small- and medium-scale producers because of the high

costs of complying with insurance, certification and inspection requirements. Although insurance is of equal concern, CPW's recommendations focus on strategies to overcome the food certification barrier, as this is a barrier that can be addressed by the participating partners.

CPW recommends the following implementation strategies to help producers and large institutions work together more effectively.

Short Term

- **Create a "How to do Business with Lane County Grocery Stores" Manual:** Hire an intern to develop a guide for growers doing business with grocery stores in Lane County. Information such as insurance and certification requirements and minimum quantity orders will be included.

Medium Term

- **Support Food Safety Certification:** Develop an education and training program to assist farmers, processors and distributors in meeting regulatory requirements. Establish a fund that would provide grants to small businesses and farmers to defray certification costs.

GAP V. CAPITAL FOR INFRASTRUCTURE AND MARKETING PROJECTS

Capital is needed to encourage processor- and distributor-supported agriculture and to build much needed on- and off-farm processing and storage facilities. Resources are also needed to support a local food market strategy that will foster increased consumer and large institutional awareness on the health and social benefits of local food. For farmers and small- and mid-size processing operations, limited access to capital can hinder their efforts to expand or purchase essential equipment. As increasing attention is given to producers and consumers of local food, the financial sector also warrants attention, so that any new options for access to capital can be developed and tested, or so increased awareness among potential lenders can help to improve access to existing tools and resources.

CPW recommends the following implementations strategies to increase capital for infrastructure and local food marketing projects.

Ongoing

- **Increase Access to Loans from Local Banks:** Work with local lenders to identify banks that are interested in working with farmers. Provide technical assistance in data analysis related to loan applications.
- **Create a Public Revolving Loan Fund for Farmers, Processors and Distributors:** Use lottery funds or some other source to provide short-term loans to growers, processors, and distributors for infrastructure projects.

Summary of Implementation Strategies

Table 6-1 describes key details of the implementation strategies. These strategies are described in detail in Appendix J.

Table 6-1. Summary of Implementation Strategies

Gap	Strategy	Intiator (client)	Actor	Funding Opportunities	Cost	Timeframe
Gap I: Linkages Between Growers & Local Markets	Create a Local Food Coordinator Position	County	County and City	USDA Grants, County	$60,000-$75,000	1-2 years
	Create an Insitutional Clearinghouse	County	Local Food Coordinator	Americorps position, county or city funds, invoicing fees	As needed	1-3 years
	Optimize Food Distributor Logistics and Capacity	County	Local Food Coordinator	USDA Grants	As needed	Ongoing
	Help Distributors Market Local Food	County	Local Food Coordinator	N/A	As needed	2-3 years
	Develop Institutional Contracts that Require Local Sourcing	City	Schools and other institutions	Law school externship	No cost	1-2 years
Gap II: Limited Processing & Storage Capacity	Develop Tomato, Ben, and Squash Co-Pack Facilities	County	Processors	County, USDA grants	As needed	2-3 years
	Develop Controlled Atmosphere Storage Capacity	County	Processors	County, USDA grants	$500,000	2-3 years
	Increase Wheat Milling and Storage Operations	County	Producers, processors, distributors	County, USDA grants	As needed	1-2 years
	Research On-Farm Processing needs of Mid-Sized Farms	County	County, university	County, USDA grants	As needed	1-2 years
Gap III: Methods to Mitigate Risk	Encourage Processor- and Distributor- Supported Agriculture	County	Producers, processors, distributors	USDA loans banks, revolving loan fund	No cost	1-2 years
	Develop "Proof of Concept" through the EWEB Demonstration Farm	EWEB	EWEB	EWEB	$250,000	3-5 years
Gap IV: Institutional & Grocery Store Requirements	Support Food Safety Certification	EWEB	Producers, processors, distributors	EWEB, NRCS grants, county	As needed	1-2 years
	Create a "How to do Business with Lane County Grocery Stores" Manual	City	City, County, University, or other	Americorps position, USDA grants, university internships	As needed	1-2 years